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JANUARY 1959 $1.00

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A McGRAW-HILL PUBLICATION

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IN MANUFACTURING,
PACKAGING, MARKETING

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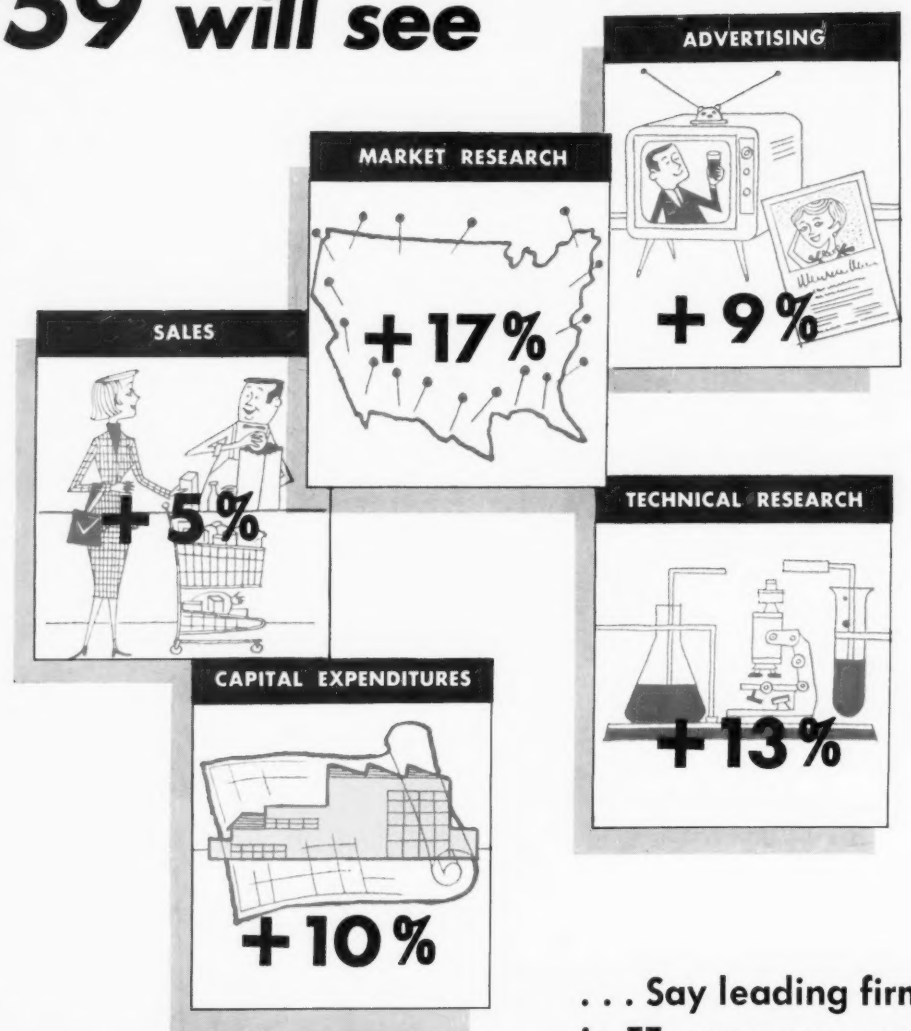

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in FE consensus survey

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FOOD ENGINEERING
FOR MANAGEMENT

JANUARY, 1959

30th YEAR

VOL. 31 NO. 1

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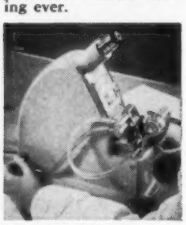

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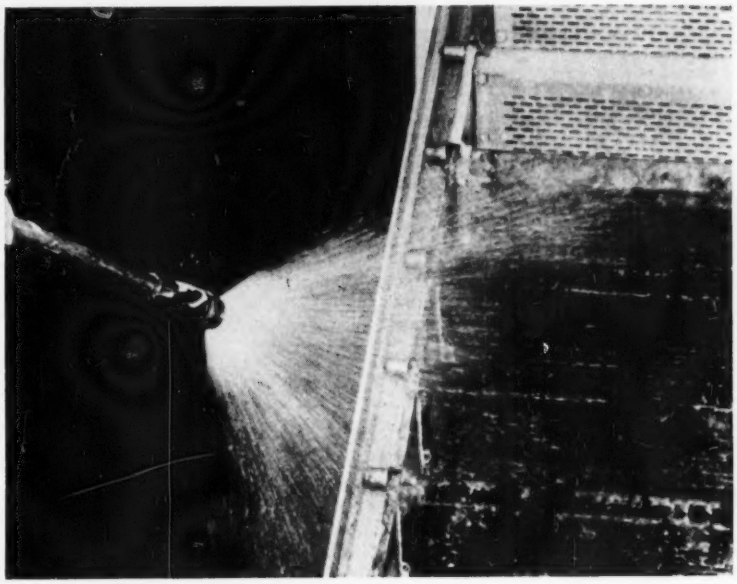

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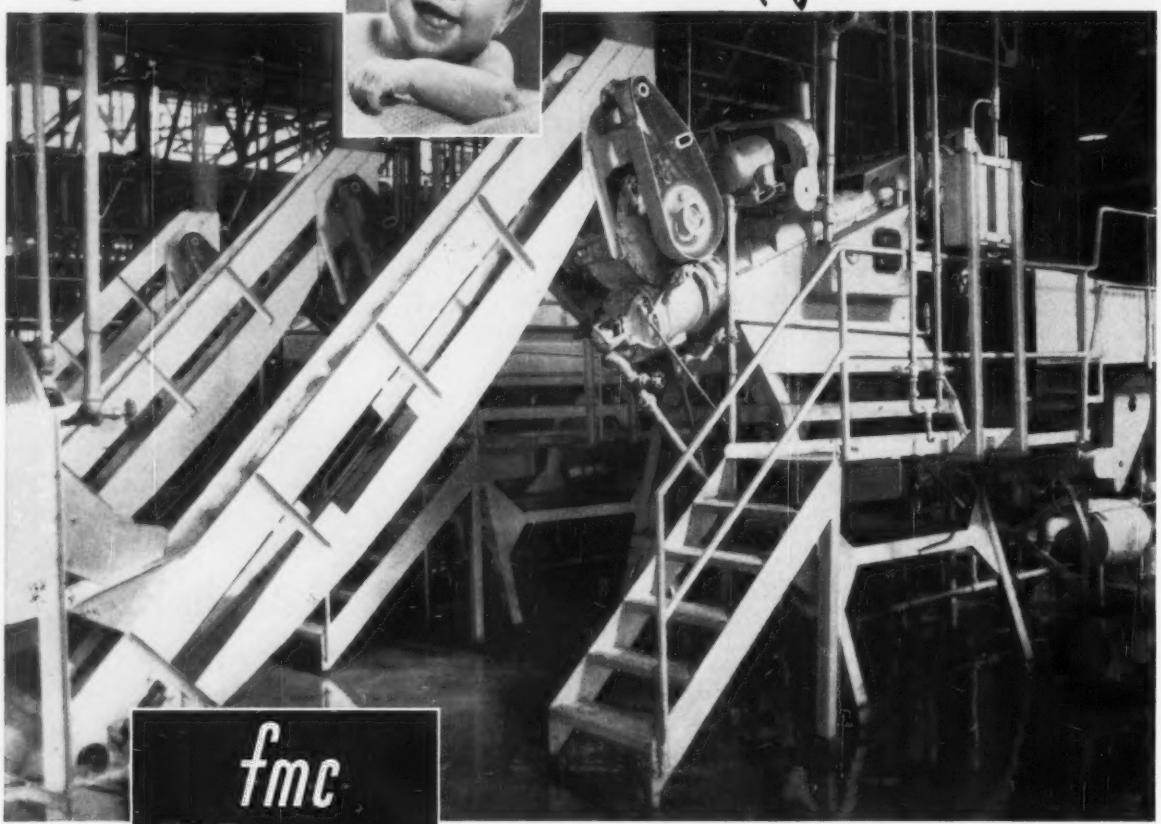
Gentle as a to baby foods



fmc Hi-Pressure steam peeler

Three FMC Steam Peelers prepare a variety of fruits and vegetables for baby foods at Beech Nut's San Jose, California plant.

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Full information is contained in our "Steam Peeler Facts" Bulletin, Volume 5, No. 2. Write for your copy today, or call your nearest FMC representative.

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TRENDS & FORECASTS

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FE forecasts these increases for '59—sales 5%, advertising 9%, market research 17%, technical research 13%, capital expenditures 10%.

Prices are seen as same or lower by 75% of firms; profits higher, 87%.

New or improved products will be introduced by 84%. Of technical research dollars, 47.6% will go for product development; 9.3% for packaging; 25.3%, processing; 17.8%, other.

Cost increases in '58 reported by USDA: Metal containers 3.8%, glass containers 8.9%, machinery 2.5%, trucks 5.2%, construction 1.2%.

Average '58 net profit per dollar of sales is off slightly to 2.7c. for 89 grocery manufacturers surveyed by GMA. Profit was 2.8c. in '57, compared to 4.1c. in '46 and 4.6c. in pre-war '39.

Growing faster than anticipated, U. S. population passed 174 million in '58, is expected to hit 177 million in '59, and 215 to 244 million in '75.

Demand for fruits and vegetables will be 58% higher in 1975 than in '56, according to forecast by USDA economists on basis of population.

Imports of specialty food products are expected to increase 15 to 20% in '59, according to National Assn. for Specialty Food Trade.

Increase of 9% in 10 major winter vegetable crops is forecast by USDA. Last year's crops were reduced by freezes and floods in Florida.

Winter potato crop is forecast 16% below that of '58, or 4,170,000 cwt.

Frozen strawberry pack is down 8.4%, exclusive of California, to 131,402,394 lb., NAFFP reports. California pack is expected to be about 120 million lb. for lowest total output since '54.

Why isn't Calpak in frozen food business? Because company notes gain in canned vegetables from 52.3 to 83 lb. per capita in post-war period. Per capita consumption of frozen was 17.5 lb. in '57 by comparison.

1958 pack of frozen peaches is off 7% to 41,358,669 lb. Output of frozen cut corn is 5½% less than in '57, or 105,991,830 lb.

Crops of apples, peaches, and grapes are larger than year ago and above average, USDA reports. Tonnage is smaller for other deciduous fruits.

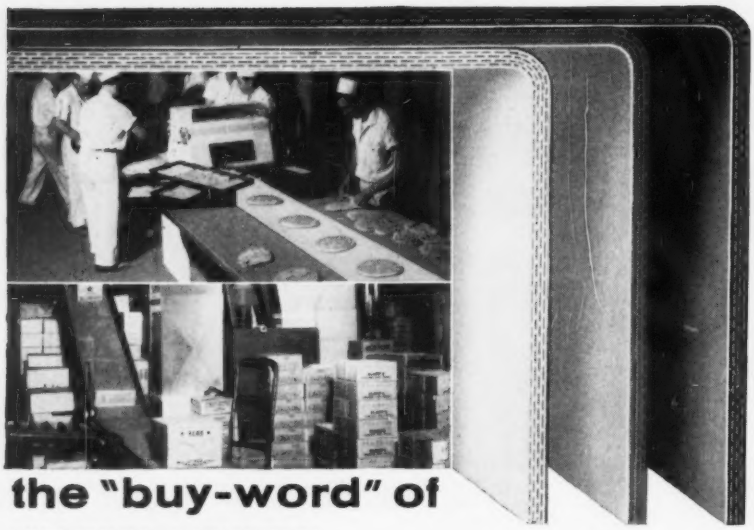
Poultry used in processing increased nearly 19% to 187,978,000 lb. during first 9 months of this year, according to USDA tabulation.

Confectionery sales were up 4% in dollars for first 9 months of '58. Five-10¢ specialties were 9% higher and $1-or-more-a-lb. candy, 8%.

See Developments to Watch p. 13

Canned tomato pack for '58 is up 41%, to 29,604,341 cases, NCA reports.

Frozen fruit output, including juices, is estimated by USDA at 86% of '57; canned fruit, 98%; canned fruit juices, 89%; dried fruit, 82%.



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January '59

26-29—Plant Maintenance & Engineering Show; Public Auditorium, Cleveland.
26-29—Heating & Air-Conditioning Exposition; Convention Hall, Philadelphia.

February

1- 4—United States Brewers Foundation, annual convention; Waldorf-Astoria Hotel, New York City.
2- 4—National Dairy Council, annual meeting; Hotel Statler-Hilton, Boston.
13-15—Institute of American Poultry Industries, fact-finding conference; Municipal Auditorium, Kansas City, Mo.
18—Dairy Products Improvement Institute, annual meeting; Hotel Governor Clinton, New York City.
20-23—National Canners Assn. and Canning Machinery & Supplies Assn., joint annual convention & exposition; Conrad Hilton Hotel, Chicago.

March

1- 5—National Assn. of Frozen Food Packers, annual convention and machinery & supplies exposition; Conrad Hilton Hotel, Chicago.
2- 5—American Society of Bakery Engineers, annual meeting; Edgewater Beach Hotel, Chicago.

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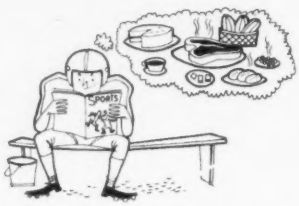
▶ Twenty-four ounces of beer will reduce one's nervous tension 37%. It drowns the butterflies in your stomach.



▶ Good eating being "a primary concomitant of good living," a sports magazine has introduced a weekly food feature. Makes sense. Eating is America's greatest indoor sport, particularly for people past middle age.

▶ Vitamin C speeds the healing of wounds. If you're out late with the boys, drink orange juice for the road home to the irate wife.

▶ Weight-reducing frauds are said to cost Americans $100 million a year. People don't like the one sure-fire method—that pushing-away-from-the-table exercise.

▶ Small neighborhood supermarkets are gaining in popularity. Consumers not only can get to them easily, but they can get out of them quickly.

▶ There is some evidence that cherry juice helps relieve suffering from gout and arthritis. If foods become medicines, drug stores again will be able to help the ailing.

▶ Few consumers appreciate chicken as a source of protein and B vitamins. But it matters little. Housewives know that it is good for undernourished food budgets.

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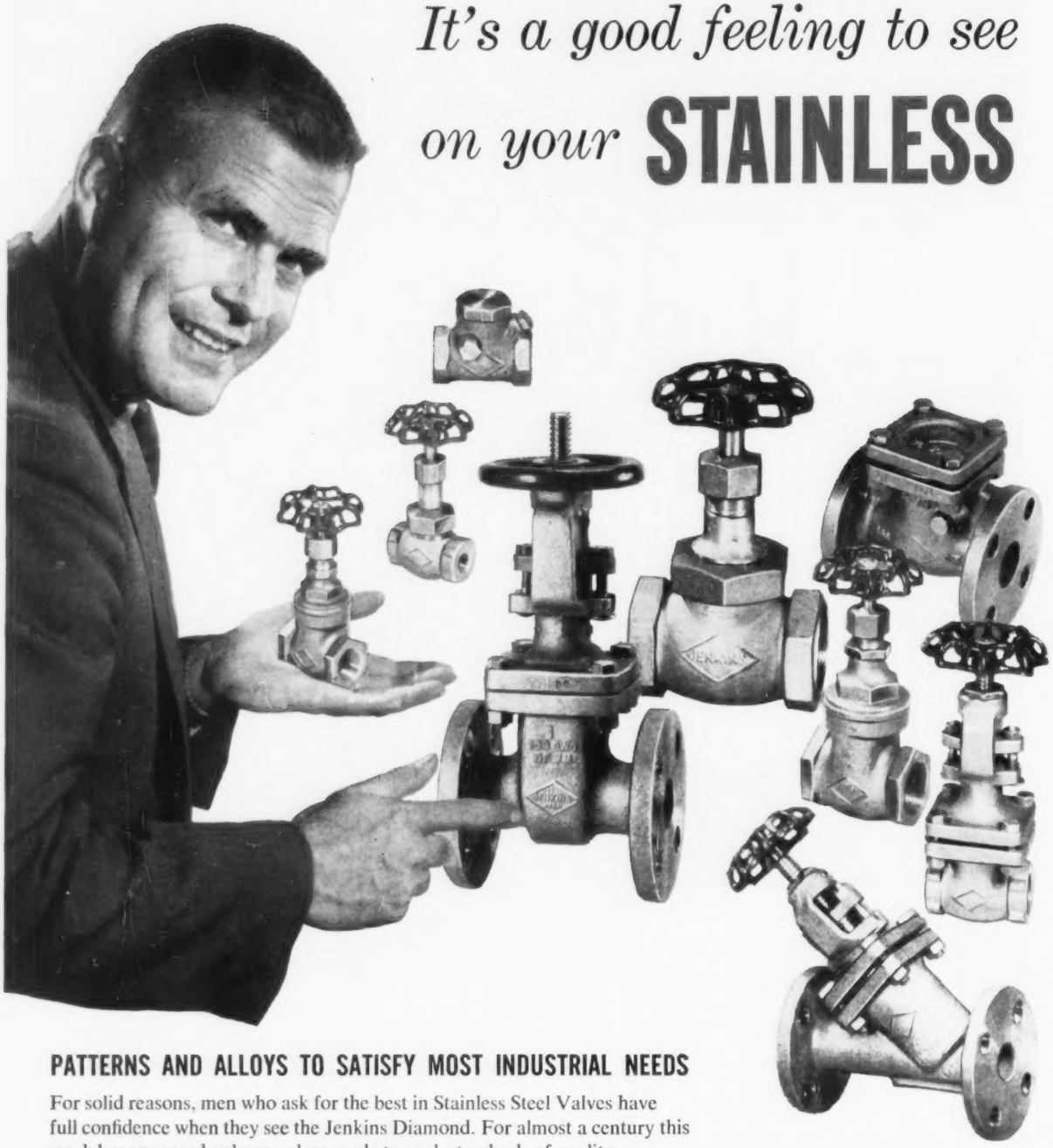

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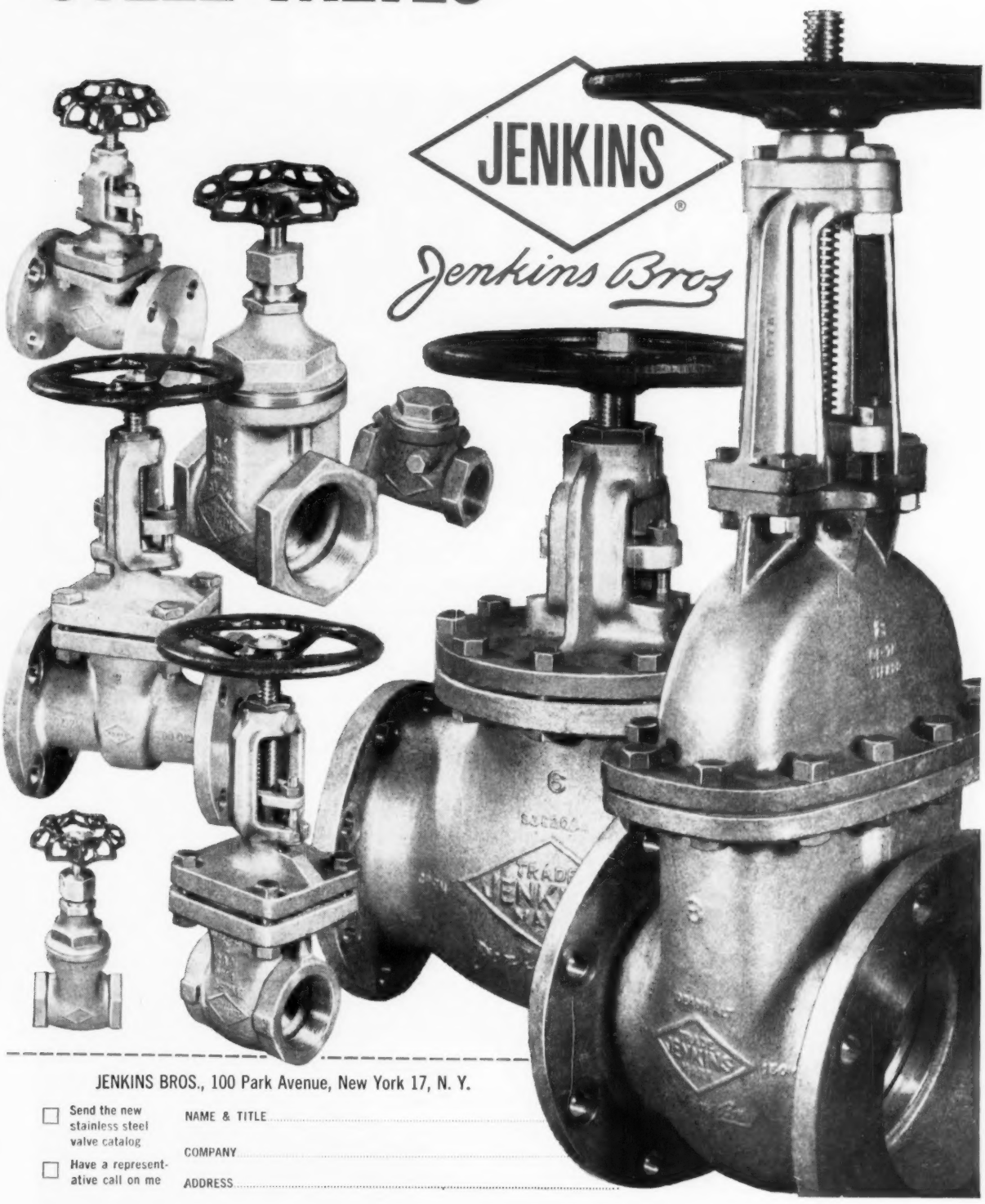

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DEVELOPMENTS TO WATCH

Research on preservation by ionizing radiation has been curtailed by Swift, Lipton, and National Biscuit because of slow progress.

Refining of cottonseed oil is improved by very rapid agitation to provide more thorough contact of the alkali with impurities, USDA reports.

Vitamin K retards spoilage of mushroom sauce, crab meat, cottage cheese, frankfurters, syrup, and jam, say technologists at Oregon State College.

Collapsible rubber tanks lined with polyethylene are now economically bulk-hauling milk, liquid chocolate, liquid sugar, vinegar, grape juice, and molasses.

Water-soluble transparent wrappers may be made from amylomaize, starch from new type corn, say National Starch and American Maize Products.

More women workers are expected to close lightweight refrigerator door developed by Jamison. One-fourth as heavy as metal-clad door, it has reinforced plastic shell and foamed-in-place polyurethane insulation.

New plate evaporator operates on climbing and falling film principle, is only 8 ft. high. Product is in evaporator short time. Cleaning is by circulation. Plates are accessible. AVP developed it.

Two new straight-line machines for making frozen stick-novelties save labor, floor space. They are Polarmatic and Vitafreze.

Laboratory plate heat exchanger that operates like production unit is De Laval innovation. Capacity is 200 to 1,000 lb. per hr.

Two-stage refrigeration is provided by one compressor with 9 cylinders in 3 banks. One bank comprises second stage of Frick unit.

Quart paper milk container with polyethylene coating is being introduced in 25 cities. Leakers and flaking-off of coating are said to be eliminated. Containers are Sealright; coating, Du Pont.

New polyethylene-coated corrugated board cuts loss of moisture from meat and resists grease from meat, butter, and baked products. Board is from Mead Corp.; coating, U.S. Industrial Chemicals.

Liquid instant coffee now is packed in pushbutton can by Tasti-Cup.

Heinz is packaging ketchup in ½-oz. aluminum foil pouches for institutional trade. Product is packed at 200F. and quickly cooled. Foil is laminated to polyethylene on inside, glassine on outside.

Corrugated box that is assembled and sealed by pressing precoated flaps together is Stone Container innovation. It is suited to short runs of different boxes that do not justify automatic case-sealers.

Nutrition Foundation has assigned to 12 universities and medical schools additional grants totaling $128,000. In 17 yr., grants amount to $5 million, plus supplementary $1 million for research on fats.

USDA has new fruit, vegetable utilization lab at Winter Haven, Fla.

Miniature brewery at U. of Cal. will aid teaching and research.

United Steel Workers wants to be bargaining agent for employees in Minute Maid citrus plant in Florida. Union is in can factories.

The warehouse of the Coca-Cola Bottling Company, Las Cruces, New Mexico was photographed in natural light.

With the lights turned out does your warehouse look like this?

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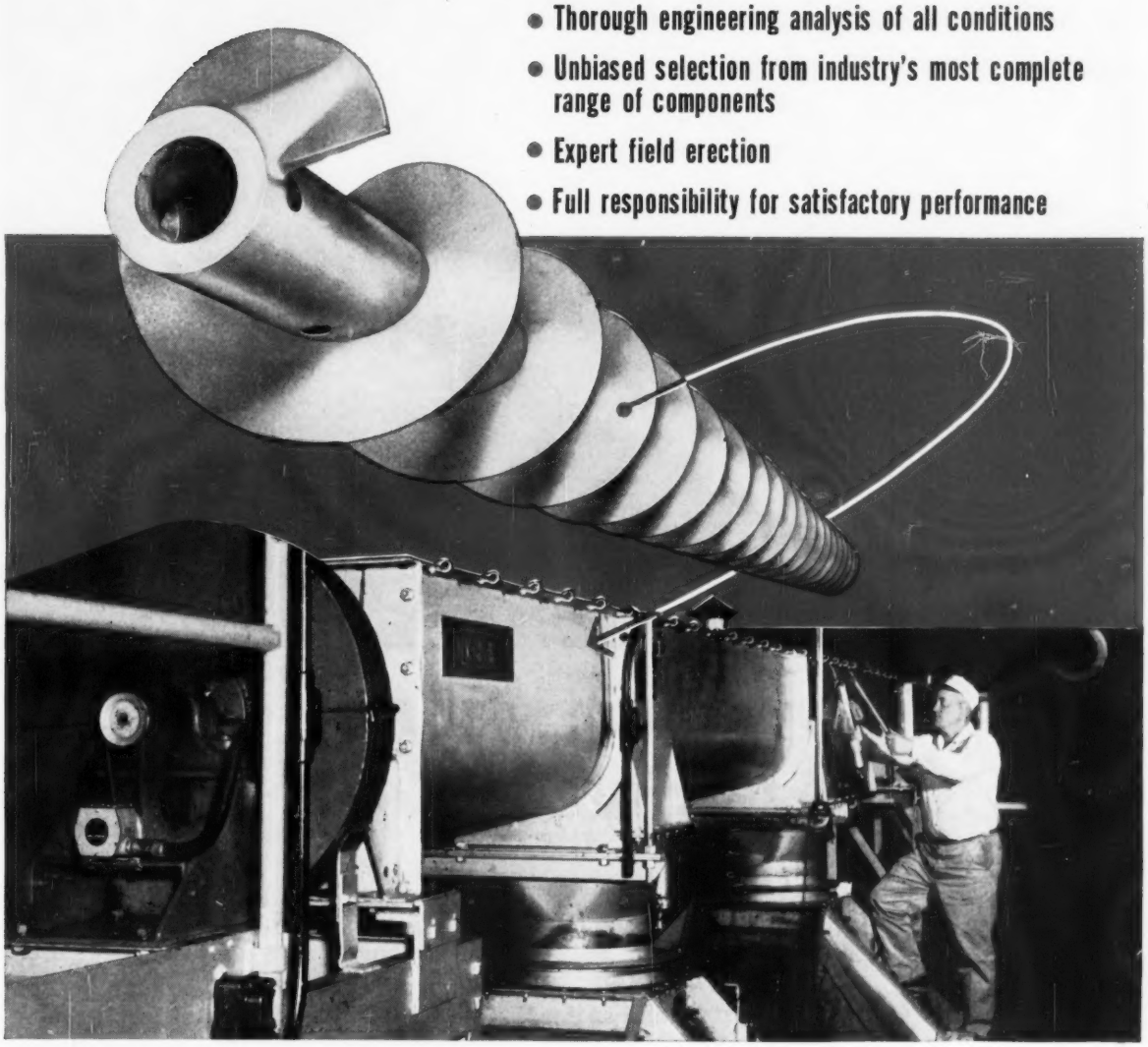
- Expert field erection
- Full responsibility for satisfactory performance



FROM design of equipment to operation, you leave nothing to chance when you leave everything to Link-Belt's complete screw conveyor service. Whatever your needs, Link-Belt can engineer a system to meet them exactly . . . if desired, will handle entire erection and accept full responsibility for placing your system in operation.

Included in Link-Belt's full line of components are 17 basic screw designs, available in a variety of metals. Each offers Link-Belt's exclusive Quik-Link feature that permits fast, easy removal of any conveyor screw section or hanger without disturbing other components. An equally complete line of troughs, ball and babbitted bearing hangers, trough ends with ball bearing flange blocks and trough end seals, couplings, gates, spouts, and drives makes Link-Belt your convenient, one-source supplier for all your requirements. Ask your nearest Link-Belt office for Data Book 2289.

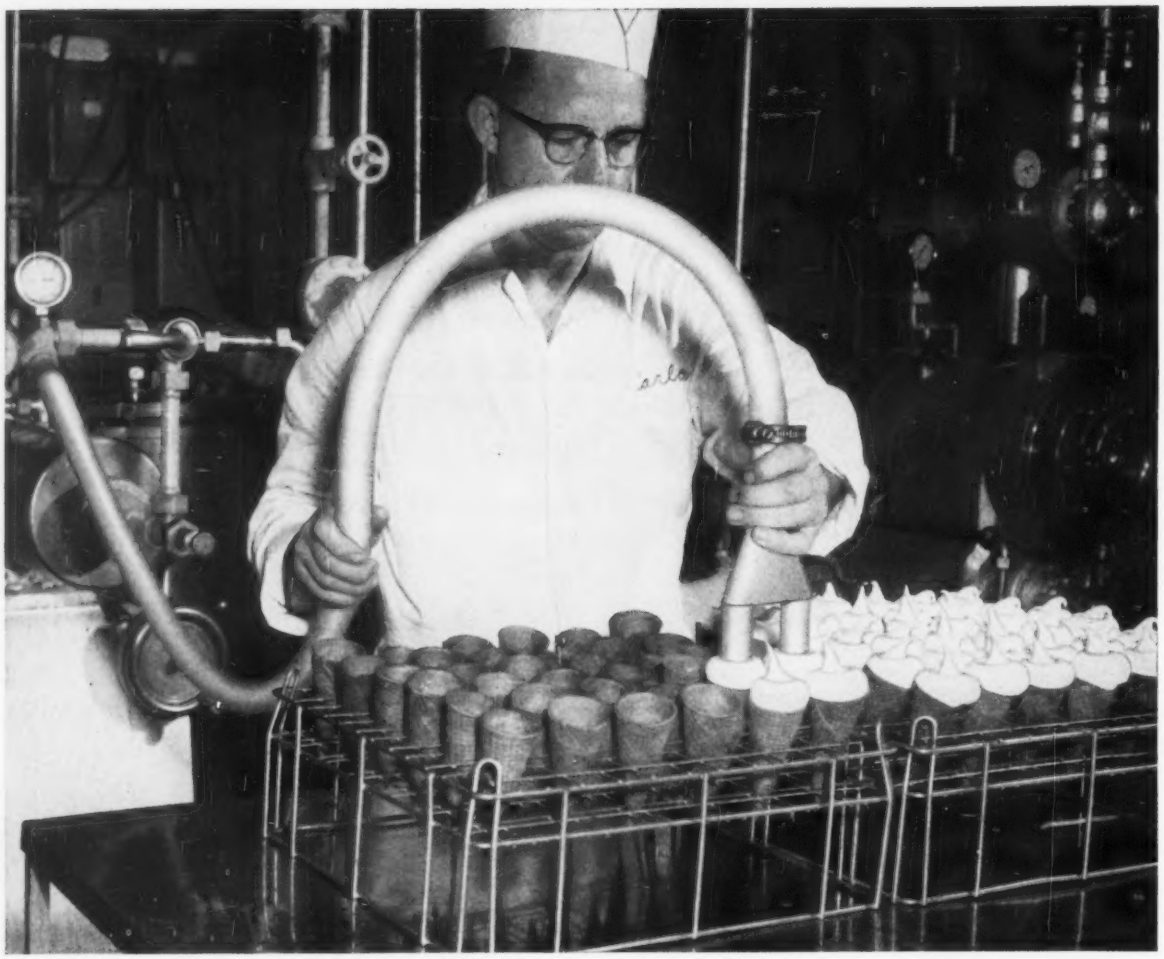
LINK-BELT

14,707

SCREW CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

For more data, circle 255 on Reader Service Card



PIPE MILK PRODUCTS SAFELY THROUGH clear, flexible TYGON TUBING

Milk is particularly sensitive to contamination. It readily picks up both taste and odor. That's why especial care must be taken in the selection of milk handling and processing equipment.

And that's why flexible-plastic Tygon Tubing B44-4 is becoming more and more popular as a piping medium with milk plants. For Tygon Tubing B44-4 was developed exclusively for handling milk and milk products.

Sparkling clear, flexible, non-toxic and non-contaminating, resistant to all cleaning agents used in dairies and milk plants, this unique plastic tubing offers a host of advantages.

Tygon is a registered Trade Mark of The U. S. Stoneware Co.

Tygon Tubing B44-4 is available in a range of 66 sizes from ⅛" to 3" bore. Write for Bulletin T-90 which contains complete technical data.

178-F

U. S. STONEWARE
AKRON 9, OHIO

Focus on '59 Legislative Picture

With Congress back in action, here's a rundown on some of the developments you can expect–

- **Taxes:** Neither raising or lowering of rates is likely But pressure will be tougher due to closing of loop-holes, rescinding of exemptions. Figure 52% corporate rate continuing. Watch for a cutting back on the kinds of income entitled to 25% capital-gains rate.
- **Labor:** Reforms in view are seen paralleling 'middling' Ives-Kennedy measure that failed last year.
- **Farm price supports:** They'll get a thorough going-over in a new farm bill. Democrats are worried about their costs–seen climbing past $7 billion.
- **Farm co-ops:** May be 'technical' legislation–but not kind that co-op critics want.
- **Fair trade:** Harris bill to permit fixing minimum retail prices will be up again. Observers give it less than 50-50 chance. National Assn. of Retail Grocers has steered clear of taking a formal stand.

Red 32 Citrus Tint 'Out'; Push New Dye

Coal-tar Red No. 32 may not be used to tint oranges after Mar. 1. That's the Supreme Court's recent unanimous ruling upholding FDA's ban.

The special act of Congress that had granted growers a 3-yr. stay on the FDA order expires on the date named–making the ban automatic.

To avoid the prospect of marketing unattractive green-skinned fruit, a push is underway for immediate legislation to allow growers to substitute the recently developed Citrus Red No. 2, termed "25 times less toxic than Red 32." FDA is said to be amenable to temporary use of the Red 2.

The Court's opinion on Red 32 supported FDA arguments that (1) certified use of a coal-tar color depends on whether it is itself harmless, not whether it is harmless as used; and that (2) if a coal-tar is toxic, FDA has no authority to permit its use in specific foods through any "safe level" tolerance system.

Crackdown to Keep Frozens Frozen

The whole chain of frozen food distribution will be under mounting pressure to jack up the performance in keeping products at proper temperatures.

USDA's Refrigerated & Frozen Products Research Committee has given high priority to time-temperature tolerance studies. And the Assn. of Food & Drug Officials of the U. S. (AFDOUS) is busy working up model temperature codes covering all stages in (1) packing, warehousing, and transporting, and (2) retailing.

Drafts of the codes are expected to be approved by midyear. They'll then be posted for guidance of state legislative and health groups, a number of which are avid for action.

Checkups have accented the need to crack down on temperature mishandling. The National Frozen Food Distributors Assn. cites a study revealing that one-third of the shipments received for warehousing were in excess of +10F., with a considerable number ranging to +28F.

Further, an NAFFP-AFDOUS survey of retailers found 54% of frozens in display cases and 48% in backroom freezers standing at various levels above zero.

Senators Push Retailing Probes

Sharp Senate interest in food-retailing investigations marked the month.

Calling "maintenance of unrigged markets" vital, Sen. Hubert Humphrey said that his Retailing, Distribution & Fair Trade Practices subcommittee will carefully examine the facts turned up in FTC's probe in the retail sphere (FE Nov., p. 21, and Dec., p. 17).

This means that some Senate delving is almost certain to cap FTC's foray into the field. However, such action isn't likely until '60, since FTC's work won't be finished for a number of months.

Further development was a charge of "incipient monopoly in milk distribution" against Adams Dairy interests in Missouri, as suppliers, and A&P, Safeway, and Kroger, as retailers.

Here, Sen. Estes Kefauver's anti-trust subcommittee lists evidence of an arrangement to "capture the market" through "wider and arbitrary differentials between the price of milk sold at home delivery and the store retail price". The report cites the dismissal of other suppliers, and it calls for an investigation by both Justice Department and FTC.

ICC Eyes Refrigeration-Unit Charges

Contractual charges made for use of mechanical refrigeration units on railroad cars are now being looked into by ICC.

Some frozen food people have contended that the rates for such units have been unrealistically based on the more costly ice-type refrigeration.

Currently, there are about 3,500 mechanical units on the road, compared to more than 70,000 conventional ice and salt cars.

BRIEFS

Starting sugar quota for '59 is 9.2 million tons–up 400,000 tons from initial '58 figure. Users are pleased by boost, which USDA termed desirable in view of "current supply uncertainties" (short crops in the islands and civil-strife blockages in Cuba).

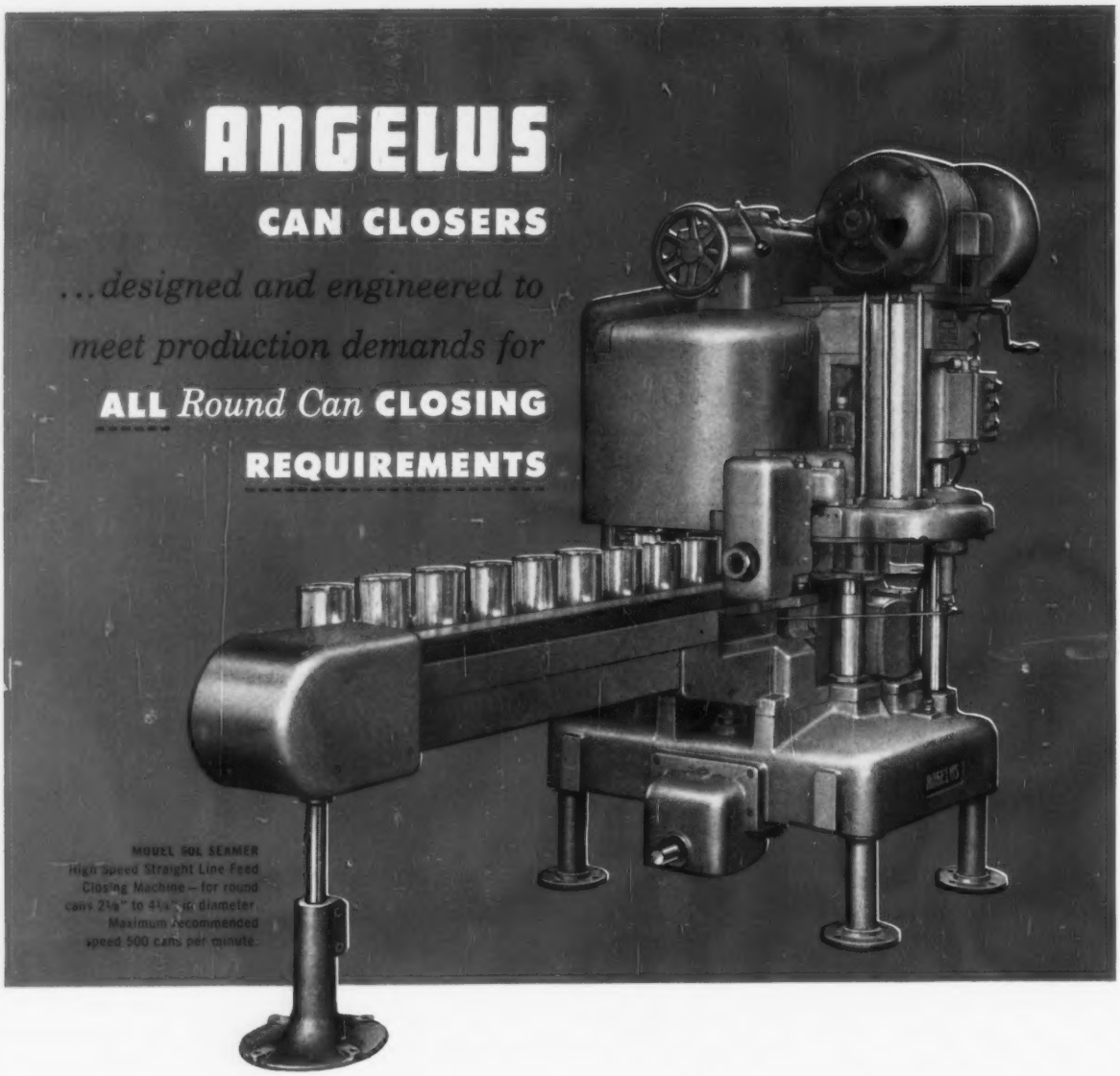
A sharper look at your tax write-offs may be in order. For a checkup by Joel Barlow of the Tax Institute–made in the midst of all the cries for faster depreciation–shows that very few managements are yet taking advantage of the easements afforded them in 1954!

The lucrative vending-machine business attracts racketeers. And since more and more food is sold through coin units, it's pertinent news that Sen. McClellan's Improper Activities Committee is now probing such hoodlum infiltrations.

ANGELUS

CAN CLOSERS

...designed and engineered to meet production demands for **ALL** *Round Can* **CLOSING REQUIREMENTS**



MODEL 50L SEAMER
High Speed Straight Line Feed Closing Machine — for round cans 2⅛" to 4¼" dia. diameter. Maximum recommended speed 500 cans per minute.

The complete line of Angelus Seamers with their wide range of accessories are adaptable for any type of product in production volume from 30 to 500 cans per minute.

Angelus is the nation's only manufacturer exclusively producing automatic round can closing machines. Every machine is backed by over 45 years of specialized experience.

Angelus machines are rugged and dependable; they are simple to operate and maintain; they represent the lowest possible initial investment.

WRITE TODAY for complete details. Specify products, can dimensions and your capacity requirements.

ANGELUS
Sanitary Can Machine Company
Cable Address "Angelmaco" Western Union Code
4900 Pacific Boulevard • Los Angeles 58, Calif.

For more data, circle 257 on Reader Service Card

For more data, circle 258 on Reader Service Card

NEW LIFT... LONGER LIFE FOR YOUR PRODUCTS WITH FIRMENICH POWDERED FLAVORS

New and improved techniques of process drying, exclusively employed by Firmenich, yield powdered flavors that flow freely, are dust free, and give you the finest precision in flavoring your products. These important developments in quality flavoring will improve the taste appeal of your products . . . extend their shelf life . . . give them package-to-package uniformity that captures customer preference. Samples of Firmenich Powdered Flavors, with technical information on their practical application, on request.

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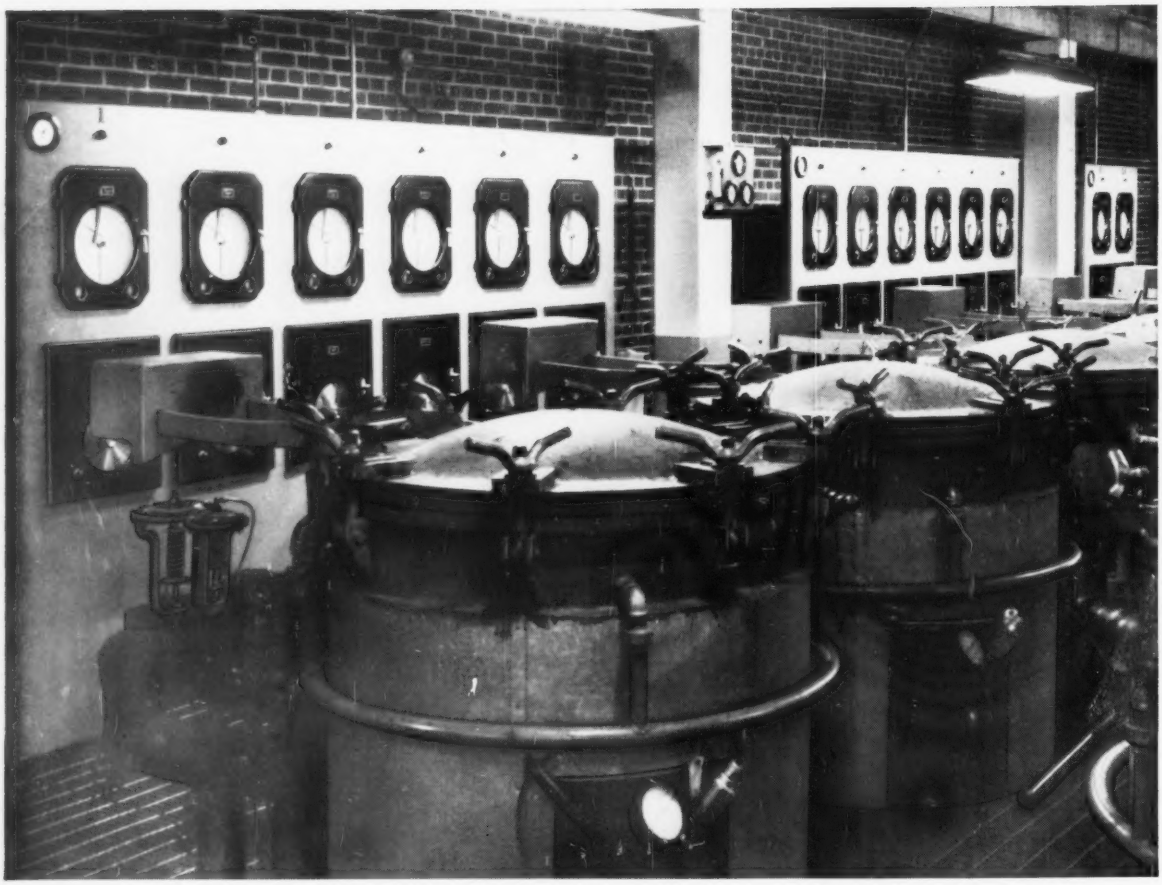


Taylor FULSCOPE Controller and FLEX-O-TIMER* Timed Program Controller on Hormel's baby food line.*

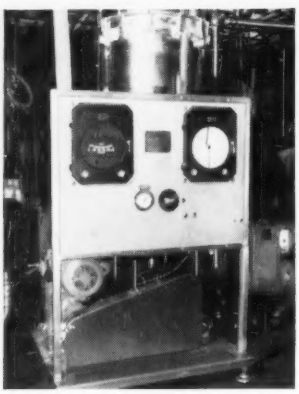
Hormel guards baby food quality with Taylor fully automatic system

THE GEO. A. HORMEL CO. at Austin, Minnesota, relies on a Taylor fully automatic retort control system to assure quality and economy in their broad baby food line.

With the exception of pushing the start button all manual operations are eliminated. Entire cook from pre-heat to sequence control resetting for next cycle is fully automatic. With this Taylor system both man power and production equipment are used to maximum efficiency. Automatic control of temperature and pressure saves steam. The precise timing afforded means maximum production with complete uniformity of product — cook after cook.

In addition, the Taylor retort control system can be changed in minutes from one form of cooking to another. You get full use and full capacity with virtually no loss of time. For further information consult your Taylor Field Engineer, or write Taylor Instrument Companies, Rochester 1, N. Y., and Toronto, Ontario.

*Reg. U.S. Pat. Off.



High speed continuous heating in the Calefactor demands precise control which is effected by regulating direct steam injection in response to accurate sensing of product discharge temperatures.

Taylor Instruments MEAN ACCURACY FIRST

For more data, circle 259 on Reader Service Card

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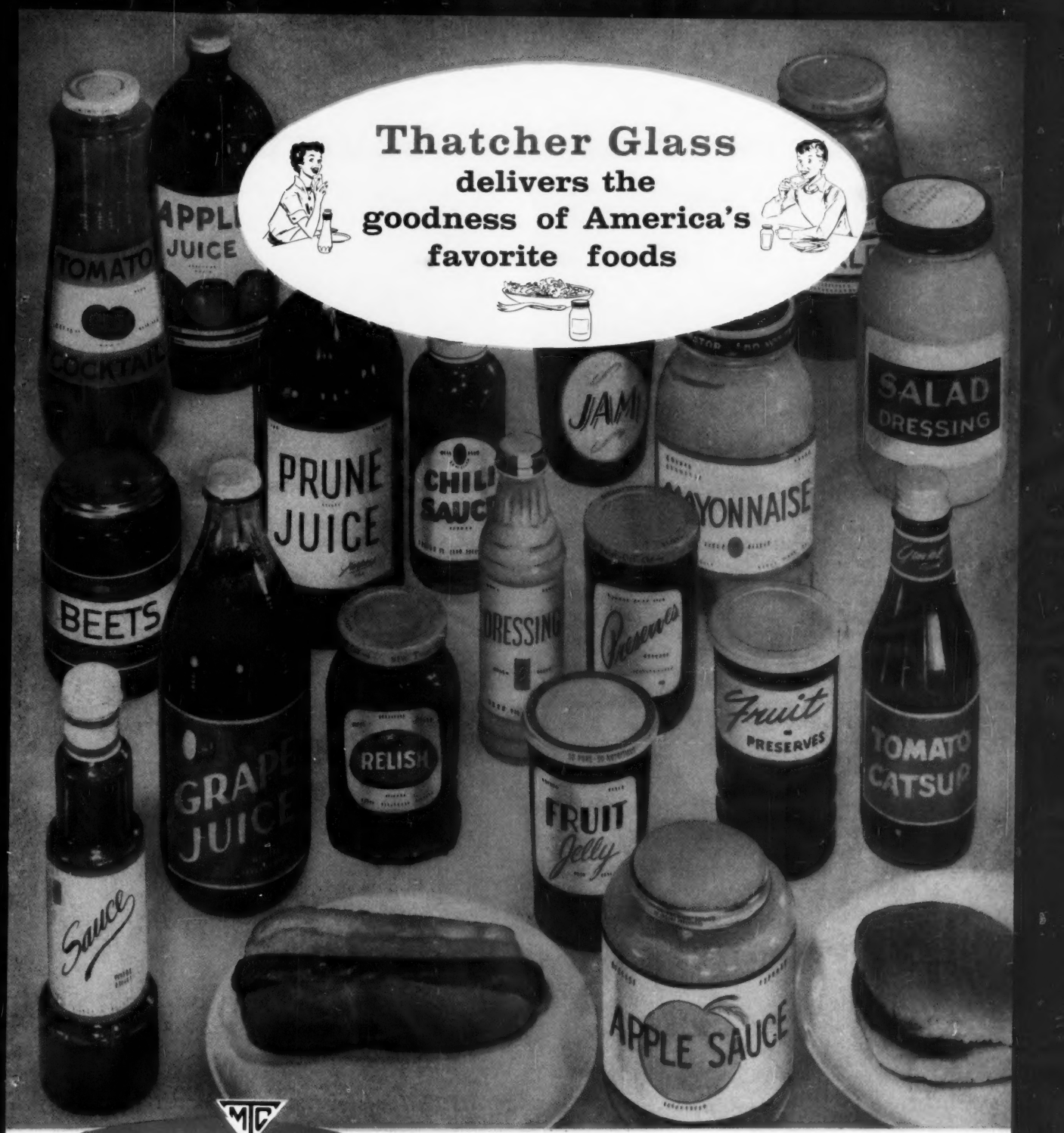


Thatcher Glass

Glance in any refrigerator or pantry and you'll discover one important reason why more women buy more products packaged in glass. It's simply that homemakers have found they can store just about any food safely and conveniently in glass . . . and always tell "how much is left", too. Of course, Thatcher can do a lot to help you make sure they'll select *your* brand from the shelf. Thatcher jars and bottles are designed to stay better-looking, longer . . . to add sparkle to the appetite appeal of your product. Whether you package in a private-mold or standard container, by all means talk to the man from Thatcher. He is a packaging expert whose experience is at your disposal.

THATCHER GLASS MANUFACTURING COMPANY, INC., NEW YORK, N. Y.

FACTORIES: Elmira, N. Y., Jeannette, Pa., Streator, Ill., Lawrenceburg, Ind., Saugus, Calif.

SALES OFFICES: Elmira, N. Y., Boston, Hartford, New York, Philadelphia, Detroit, Chicago, Minneapolis, Louisville, Los Angeles, San Francisco, St. Louis

NEW PACKAGES & PRODUCTS

Liquid Instant Coffee–in Aerosol

A liquid instant coffee packed in a pressure can is being readied for national distribution. Made by Tasti-Cup Coffee Corp., New York, the new package dispenses 8-oz. of liquid coffee. The can must be refrigerated.

With the present package, the consumer must measure the concentrate into a spoon before mixing it with water. It is reported that the processor is currently developing a measuring valve which could be set to dispense the amount needed for one cup.

Ingredients of the product are listed as being only coffee and water.

Circle 1 on Reader Service Card

"Press and Stick" Boxes Make Debut

Corrugated boxes which can be assembled by merely pressing the prefabricated flaps together are a new development of Container Corp.

The boxes have flaps coated with a lastex base coating. When two coated flaps are pressed together a strong bond results. This closure could replace conventional stitching, glueing, and taping.

Obvious savings are realized in labor, machinery, and materials. Also, the flat boxes take up less space.

Most logical application of the boxes is an operation where there is no long continuous run of identical boxes.

Circle 2 on Reader Service Card

Tuna in 3-Can Multipack

A wrap-around foil multipack is spurring sales for Breast-O'-Chicken tuna, San Diego. Three 6½-oz. cans are automatically set into the pack on Continental Can Co.'s Jak-Et-Pak 120 at a rate of up to 120 carriers per minute.

In addition to its easy-stacking feature, the carrier offers a wide area for sales messages. It is printed on foil laminated boxboard in the same color pattern as the can: red, green, gold, and white. The top and side panels feature the brand name and the bottom offers recipes for preparing the product.

Circle 3 on Reader Service Card

for a pip of a dip
for a pip of a dip
for a pip of a dip
Lawry's
dip
Lawry's will pay you...
To try any of these Dip Mixes
30¢ to try all 3
10¢
OFFER EXPIRES JAN. 1

After 2 Years of Market Research

Making its debut after two years of product testing and development is Lawry's Foods new dip mix line. Made in three flavors–onion, garlic, and bleu cheese–the dips are prepared by mixing them with a fresh dairy product such as cream or cottage cheese.

The dips will supplement the processor's well-established line of spaghetti sauce mixes and salad dressing mixes.

Package is a "twin-pack" foil envelope which allows the consumer to make just the needed amount of dip and no more.

Introduce 7 New Frozens

Seven new prepared frozen vegetables have been introduced by Seabrook Farms in packages consisting of mylar-polyethylene cook-in pouches and colorful folding cartons.

Making their debut are: Baby lima beans in cheese sauce, asparagus cuts and tips Hollandaise style, chopped broccoli au gratin, creamed potatoes and peas, creole succotash, Delmonico potatoes, and creamed spinach. Five of the products are shown above.

Printed in five-color rotogravure, cartons feature the Seabrook family's early American kitchen on the front, one end and back panel.

Pouring Nozzle for Oil Can

Good news for vegetable oil packers is the spillproof gallon can developed for Wesson Oil by American Can Co.

Package is a gallon can with a flexible plastic spout which pulls out to guide the flow of oil. Called Pour-o-scope, the spout is resealed with a conventional metal screw cap.

The Wesson can also features a resealable vent in the top. A circular plastic disk, with air hole, can be rotated to cover a vent hole punched in the top. The vent facilitates pouring of the oil.

Circle 4 on Reader Service Card

Market Ketchup in Portion Pack

H. J. Heinz has announced distribution of its popular ketchup in a single-service container. Each aluminum foil laminated pouch holds ½-oz. of the product.

Designed for the institutional trade, the ketchup portions follow the introduction last June of Heinz's mild mustard in a transparent plastic envelope.

The ketchup package measures 1¾ x 4 in. It is manufactured of an inside layer of polyethylene, a center of aluminum foil, and an outside transparent glassine coating.

Moisture-Resistant Corrugated Box

Mid-Atlantic poultry shippers are reported to be highly satisfied with a new moisture-proof corrugated container called Control Pak.

Developed by Stone Container Corp., the boxes are impregnated with inert petroleum resins in a patented process. The result is a carton which has unusual ability to shed water and poultry body fluids.

Protection against bacterial contamination results because the body fluids from upper cases cannot drain into lower cases—a major source of bacterial growth.

Circle 5 on Reader Service Card

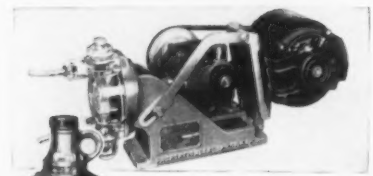
New Low Cost Chlorinated Water Supply FOR FOOD PROCESSING PLANTS

KLENZADE

KLENZADE

IN-PLANT WATER

Chlorination



★ SIMPLE EQUIPMENT

★ LOW COST CHLORINE

★ "SPOT" LOCATION

Completely automatic feeding of Klenzade XY-12 Liquid Sodium Hypochlorite into your water line with a %Proportioneers% Heavy Duty Midget Chlor-O-Feeder. Low initial equipment costs, simple installation for any section or entire plant system. No skilled operator needed, no gas risks, no maintenance of elaborate equipment. Solution strength easily adjusted for clean-up time. Get the facts on this popular Klenzade "Package" and why it is ideally suited for your food processing operations.

COMPLETE

Sanitation Programs

Branch Offices in Principal Cities

KLENZADE PRODUCTS, INC.

BELOIT, WISCONSIN

New Packages & Products

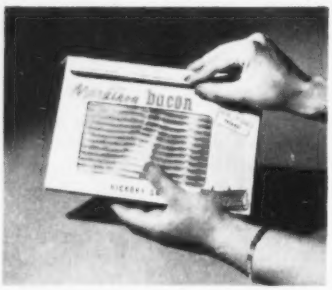
Packaging Briefs

All-Aluminum cans are used for sardine fillets packed in barbecue sauce by Franco-Italian Packing Co., Terminal Island, Calif.

Jumbo Jars designed for Gulden's mustard products hold 24-oz.

New Bag Paper called Triplex is made by Riegel Paper Co. (6)

Top Honors at 1958 Packaging Design Awards competition of Chemical Specialties Manufacturers Assn. went to a food aerosol. Winner was Anderson Foods' Sizzl-Spray barbecue sauce.



Quick-Open Bacon Box

A new "zip seal" baking package is being offered to the meat industry by Marathon.

A quick pull on a flap on the face of the panel opens the top and enables the consumer to slide out the bacon. For reclosing, the consumer need only tuck in the flap.

Circle 78 on Reader Service Card

BAKED LIKE A CAKE and eaten like a pudding are Pillsbury's new pudding-cake mixes. Now marketed in orange, chocolate, and lemon, the products come readymixed in two pouches (one with batter, the other with sauce). The content is mixed with water and one egg and baked to prepare. Each carton serves six people.

WHOLE PRECOOKED CHICKEN complete with barbecue sauce is marketed by Saucy Products Co., Texas frozen food packer.

Package is a square aluminum foil tray with a cardboard lid printed in full color.

The chicken is split and spread to fill the tray.

Coffee—With Eggs

Frozen eggs are one of the ingredients used in the preparation of North Woods Egg Coffee recently marketed by North Woods Coffee Co., Chicago.

The recipe for the instant coffee is based on that of the North Woods guides, who "know how a fresh egg brings out the smooth, rich flavor of fine coffee."

The product is packaged in a 2 oz. glass jar.

New Products Shorts

Frozen apple turnovers are the newest product from Pepperidge Farm. Turnovers are packaged four to a carton.

Tutti-Frutti dessert has been added to the H. J. Heinz Baby Food line.

January is the target date for the national introduction of Mint Marsettes, first flavor addition to the Mars, Inc. confection.

Kosher frozen line of Lou G. Siegel Food Products Corp., Newark, offers stuffed cabbage, beef goulash, meat balls and spaghetti, roast spring chicken, boiled spring chicken, roast brisket of beef.

Frozen Chicken Cacciatori in sauce is newest La Rosa frozen product.

Good News for ale drinkers is the introduction of a Jacob Ruppert ale.

Two vegetable products recently added to Del Monte canned line are seasoned peas and seasoned lima beans.

Prepackaged meats marketed by Armour & Co. now include three popular Kosher delicatessen items: Salami, corned beef, and pastromi.

Mince and Pumpkin have been added to the Campbell Soup Company line of frozen dessert pies.

Dietetic Cheddar cheese spread is being introduced by Swift & Co. in convenient 2 lb. loaves.

Pillsbury has a reason...

Whip up a cake batter from Pouch A . . . sprinkle Pouch B over the top . . . pour on a little water . . . and bake a delicious Pillsbury pudding cake. A delight for speed and ease . . . but *taste* is the ultimate test. That's why Pillsbury emphasizes *protective* packaging in their bid for repeat sales . . . using special Riegel papers in both pouches.

It's one more proof that *protected by Riegel* means extra benefits . . . product protection always, plus flexible packaging materials that are:

. . . tailored to run at high speeds on automatic machines
. . . made to your own specifications; printed, waxed, coated and laminated combinations of all types
. . . packaging materials that are made right, run right and are priced right.

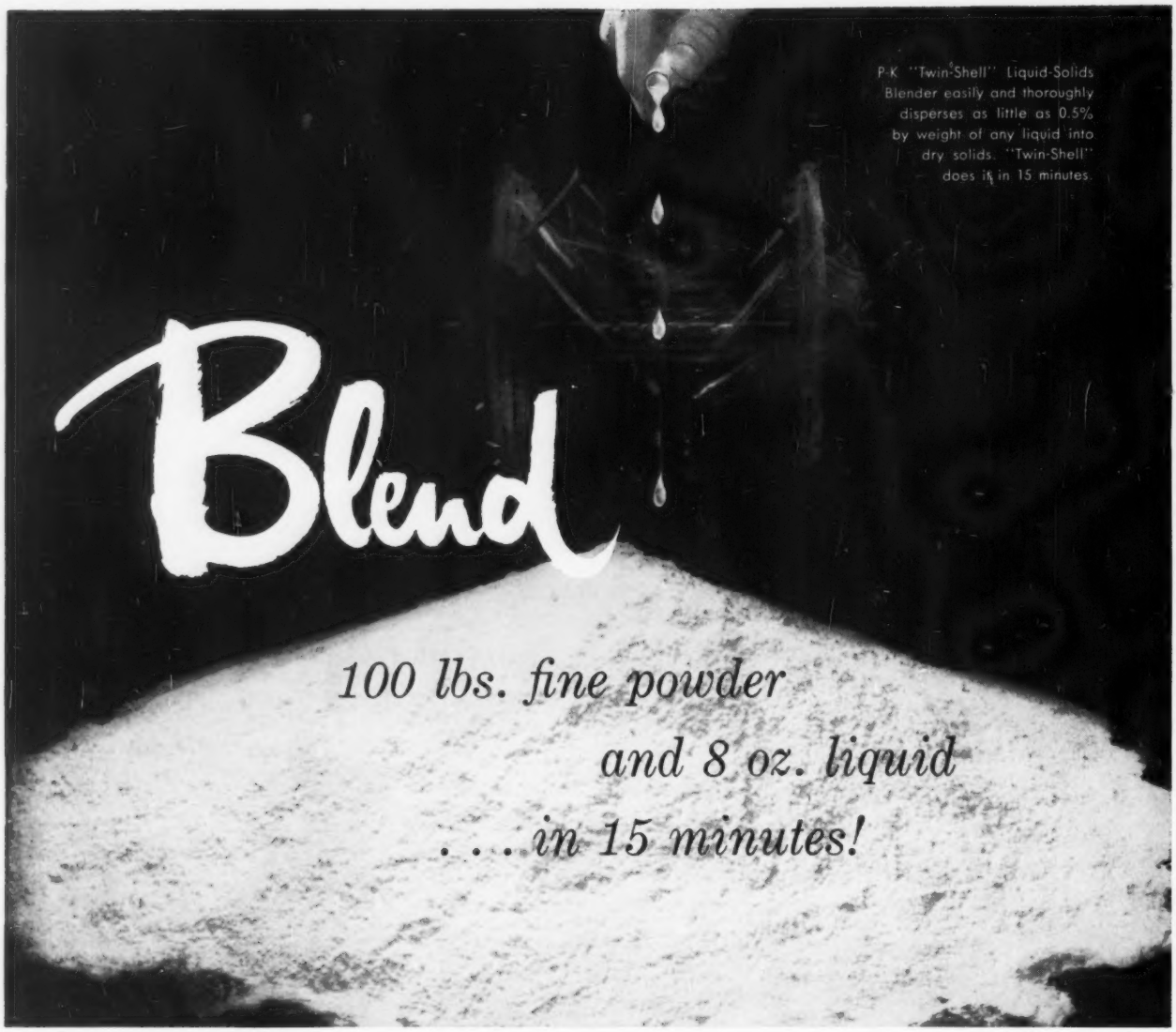
Hundreds of today's best sellers benefit from Riegel's uniformly effective system of product protection. You can too. Write Riegel Paper Corporation, 260 Madison Avenue, New York 16.

Riegel

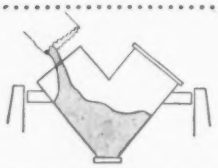
PROTECTIVE PACKAGING MATERIALS

Pillsbury Pudding-Cake is packaged in two protective pouches . . . sauce mix in poly-coated pouch paper, cake mix in a laminate of pouch paper and foil. Both webs are printed by Riegel and run at high speed on Bartelt equipment

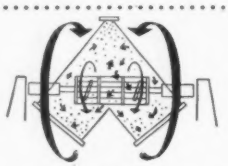
For more data, circle 262 on Reader Service Card


P-K "Twin-Shell" Liquid-Solids Blender easily and thoroughly disperses as little as 0.5% by weight of any liquid into dry solids. "Twin-Shell" does it in 15 minutes.
Blend
100 lbs. fine powder
and 8 oz. liquid
. . . in 15 minutes!

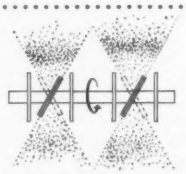
With the P-K "Twin-Shell" Blender the process industries can eliminate such post-blending operations as pulverizing and screening, with their time-consuming materials handling. Blending time itself is cut from hours to minutes. And some hitherto impossible blends are achieved easily with the P-K "Twin-Shell." Here's how "Twin-Shell's" unique design speeds processing:



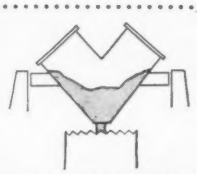
CHARGE DRY SOLIDS through top of either shell. Optimum charge level for most materials is about 65% of total shell volume.



TUMBLE AND AERATE. As shell revolves, rapidly spinning wire cage intensifier breaks up agglomerates, literally creates dust storm in material.



ADD LIQUID. Centrifugal force sprays atomized liquid from periphery of control discs on Liquid-Feed Bar into finely dispersed solids.



DISCHARGE PRODUCT easily through apex of shells. Accessibility of interior and easy removal of Liquid-Feed Bar speed cleaning.

See this new concept in blending! Accept this invitation...

Get new ideas for your blending process at P-K's Pre-Test Lab

P-K Process Executive welcomes visitor to Pre-Test Lab at East Stroudsburg, Pa. Lab is equipped and staffed to make, or help you make, conclusive tests of blenders with your own materials.

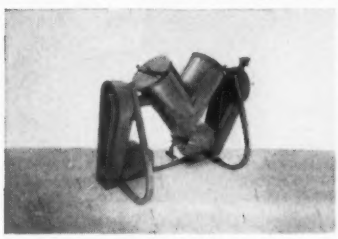
Phone Stroudsburg 820 and arrange to make comparison tests – using your own formulations – at P-K's Pre-Test Lab.

P-K makes practically all kinds of blenders – conventional types as well as the radically different "Twin-Shell." Thus, P-K can give you impartial help in selecting the correct blending process for your needs.

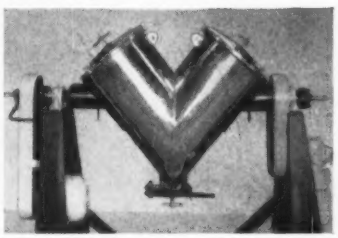
But, blending is full of variables; don't decide on *any* blending equipment or process until you pre-test it with your own formulations. The Pre-Test Lab offers you an opportunity to do this with the aid of skilled blending technicans and proper equipment . . . and without obligation, of course.

You simply bring or send your materials to the Lab. Here the correct blending procedure and equipment for *your* job are determined by extensive tests. You receive a comprehensive report that can become the basis for an informed selection.

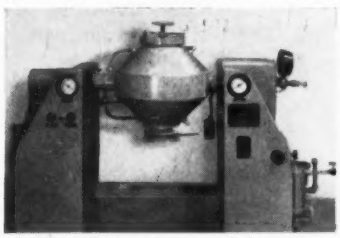
TEST YOUR MIX WITH EQUIPMENT LIKE THIS



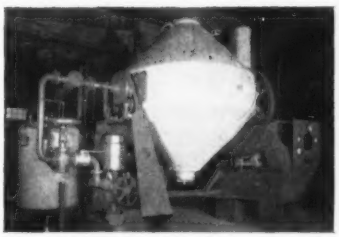
"Twin-Shell" Liquid-Solids laboratory models are made in transparent Lucite or stainless steel, in 8 and 16 quart sizes.



Production models of the "Twin-Shell" blender range up to 50 cu. ft. capacity. (Intensifier and Liquid-Feed Bar optional.)



Vacuum Tumble Dryers by Patterson-Kelley are available in sizes down to the standard 1 cu. ft. capacity lab model.



Production models of the Vacuum Tumble Driers have capacities up to 150 cu. ft. Come factory aligned, piped, instrumented.

You're invited

to pre-test your own formulations at the Pre-Test Lab. Write – or better yet, phone – Russell Dotter at P-K to set a date. (The number: Stroudsburg 820.) He will tell you how much of your materials to bring and will give you other details.

If you can't spare the time, send your materials anyway. But try to see the tests for yourself. If your process includes precision blending, your visit will be worth your while. The Patterson-Kelley Co., Inc., 2001 Hanson St., East Stroudsburg, Pa. (in the heart of Pennsylvania's scenic Pocono Mountains).

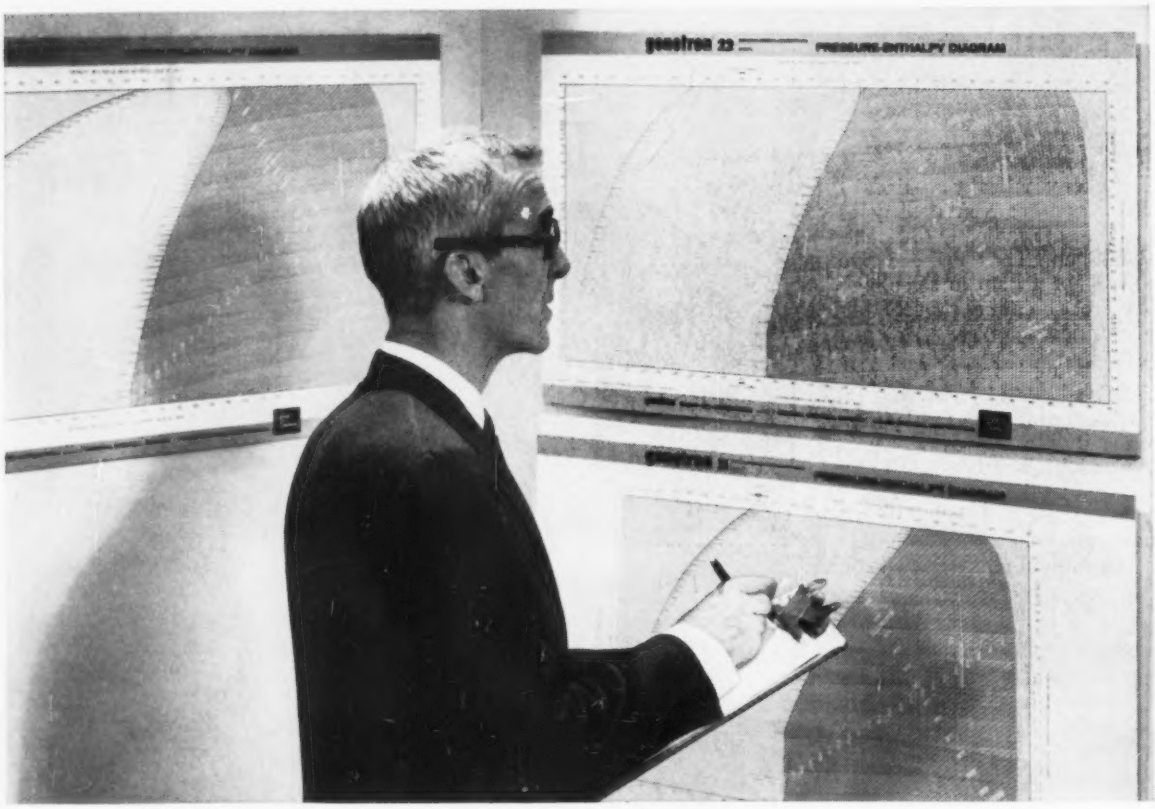
15

Patterson Kelley
Chemical and Process Division

For more data, circle 263 on Reader Service Card

NOW! General Chemical Offers Important New PRESSURE-ENTHALPY WALL CHARTS

...for genetron® Refrigerants 11, 12 and 22



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Good Looking, Too!

For the convenience of refrigeration engineers using thermodynamic data in their work, General Chemical now offers special 5-color pressure-enthalpy wall charts on the three most commonly-used fluorochlorohydrocarbon refrigerants. These large, attractive charts are easier to use than any previously available! They offer all these important advantages:

1. The most extensive range of data ever offered in large chart form.
2. Accurate, electronically computed data, interpolated from the best basic thermodynamic tables.
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4. Colors specially selected for maximum visibility and readability.

Every refrigeration engineer and consultant requiring such data in his work should have a set of these superior pressure-enthalpy diagrams.

The supply of these costly charts is limited. They are available *only* to refrigeration engineers and consultants who have real need of such data and will use it for direct application to their work. If you have a serious interest in these charts, please write today—on business letterhead. We'll be glad to send you a set without charge.

genetron®
SUPER-DRY REFRIGERANTS

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

For more data, circle 264 on Reader Service Card

Industry Moves Ahead with Plan '59...

To modernize now for growth and profits

The most expensive task to be performed in America, in this new year of 1959, is the modernization of our industrial plant and equipment. This is true despite the huge expenditures on new facilities made in the past decade.

Contrary to popular opinion, and even to much learned opinion, our industrial facilities are not up to date. In a special survey conducted in August 1958, and supplemented by further interviews since that time, the McGraw-Hill Department of Economics found that it would take $95 billion to bring all our plant and equipment up to the best modern standards. This is over $15 billion more than the record budget of the U.S. government for the coming year.

How did we get so far behind? It is true that business has made record capital expenditures in recent years, but most of this investment has been to expand capacity. And in concentrating on new capacity, industry has fallen behind on the modernization of older facilities. Meanwhile, the $8 billion a year surge of research and development has brought forth new machines and new processes, at a rate that makes prewar and even early postwar equipment badly obsolete.

The lag between what research has promised —especially in more efficient tools of production —and what has actually been accomplished up to now shows clearly in the AMERICAN MACHINIST inventory of metalworking equipment for 1958. This new study, covering 167 types of equipment in 5,800 metalworking plants, shows that three out of five metalworking machines are over ten years old. This is a startling indication of how obsolete many plants have become. A 1958 machine tool is 54% more productive than one purchased in 1948. Many of the tools industry now uses are actually of 1939, or earlier, design.

Investment Starts Up

Now industry's plans for 1959 show a new awareness of the need to modernize. In its surveys, conducted during the last part of 1958, the McGraw-Hill Department of Economics discovered these facts:

(1) Companies generally believe that a larger investment in modernization will

mean more profits—soon. Most of the manufacturing companies in the surveys expect their current modernization expenditures to pay off in less than five years. With labor costs rising steadily, it is only with better, more modern equipment that most companies can hope to make these profit gains.

(2) Industry's plans for modernization have been revised upward. Total plans for 1959 investment, in new plant and equipment, now come to $33 billion—compared with $31 billion reported earlier. And most of these new plans are directed toward modernization—installing new processes or making ready for new products, developed out of the most recent scientific advances.

It therefore seems clear that modernization expenditures in 1959 will rise enough to make an impressive start on the job of updating our plant and equipment. But it will be no more than a start. Research also is moving ahead with giant strides. Plant expenditures must increase rapidly, from 1958's low level, to win the battle against obsolescence.

How Can We Modernize Faster?

What can we do to accelerate industry's new drive for more modern plant and equipment? One aid will be an improved flow of technical information on how, and where, to modernize. With this purpose, the McGraw-Hill Publishing Company several months ago inaugurated PLAN '59, a joint effort by all its magazines to spotlight the best opportunities for modernization. During 1959, McGraw-Hill publications will continue this effort by putting special emphasis on new developments in plant and equipment.

On the key problem of financing modernization—the question "Where's the money coming from?"—the McGraw-Hill Department of Economics plans several new studies in the months ahead. The first of these will deal with the number one problem in financing: the need for adequate depreciation allowances. Such studies are a small, but we hope a helpful, part of the total effort that is needed to modernize American industry.

An Individual Effort

The really vital steps in modernizing must be taken by individual companies. The backlog of obsolete plant and equipment is widely dispersed, among firms of all sizes and in all areas. It cannot be wiped out by dynamic equipment policies on the part of a few leading firms. Not just a few, but thousands of industrial companies must take inventory of their respective equipment and compare it, case by case, with the best new machines available.

Finally, there is need for increased public recognition of the modernization problem, and for federal tax policies appropriate to a period of rapid technical change in business.

The most important point is that the modernization drive has begun. This start can accelerate, with intelligent business and public policies, to give us truly modern industrial facilities. Plant and equipment expenditures are finally beginning to reflect the stepped-up pace of research and development. This can be a major factor in renewed economic growth and prosperity as we move into 1959.

This message was prepared by the McGraw-Hill Department of Economics as part of our company-wide effort to report on opportunities for modernization in industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

Donald C. McGraw

PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

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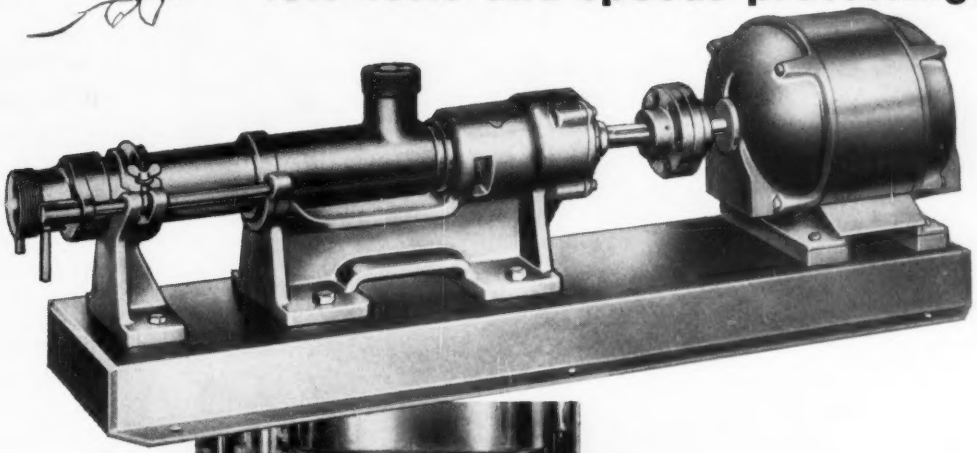
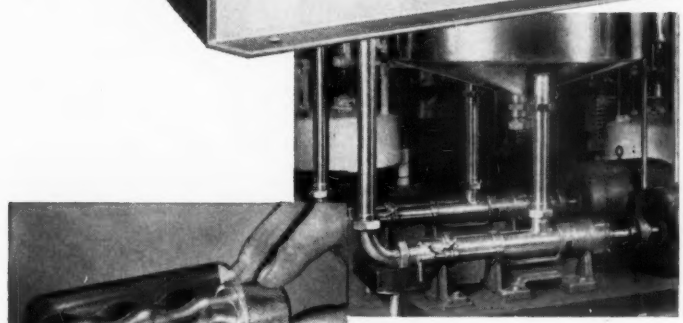
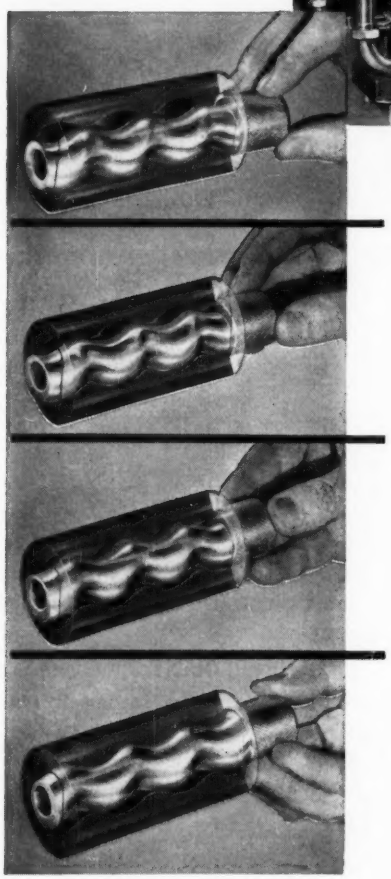




"Progressing cavity" principle . . . pumps everything from hamburger to potato salad!



With simply-designed Moynos pumping your food products, workers formerly assigned to long, costly pump cleanups can be used for other tasks! The entire Moyno unit can be quickly dismantled for thorough, effective cleaning and re-assembled in minutes. Moynos are more sanitary on the job, too. Pumping element has smooth contours which can't lodge particles where bacteria might thrive. Bearings are isolated from pumping compartment to prevent contamination by lubricant.

Moynos operate on the "progressing cavity" principle, illustrated at left. The screw-like, reversible rotor revolves in a double threaded stator, creating the progressing cavities. Material moves smoothly along, without pulsation, aeration, agitation, disintegration or contamination! All wettable parts, except stator, are stainless steel. Stator may be stainless steel, synthetic rubber, odorless bakelite or other material—depending on service. Any food product that will move through a pipe can be pumped with a Moyno—even lumpy ones like fruit cake mix!

Learn more about Moyno—the quick-to-clean pump that food can't stump. Write today for Bulletin 30-FE!

ROBBINS & MYERS, INC.

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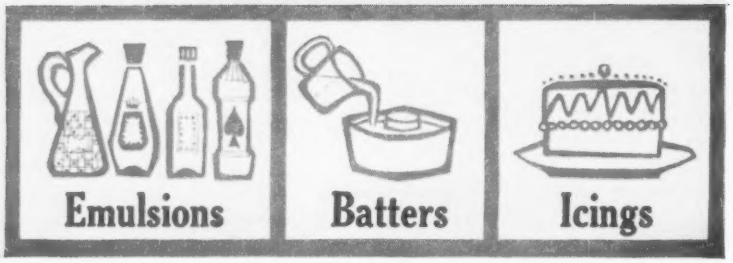
The vital ingredient in packaged dry mixes

KELCO ALGIN

Stabilizes water added to



Include Kelco algins in your instant packaged dry mixes and your customers get desired body and maximum stability in their finished products. Kelco algins make aqueous dairy products whip easier. Icings are retained on cake surfaces with greater gloss and stability. Meringues have finer texture and last longer. Home blended salad dressing emulsions are smoother bodied and have greater stability.

Wherever water, milk or other aqueous media are added to your packaged dry mixes you gain important advantages and benefits in improved body and consistency, more effectively stabilized emulsions, minimizing loss of moisture or migration.

YOURS ON REQUEST: Free samples of Kelco Algin and Technical data describing properties, usages and advantages.

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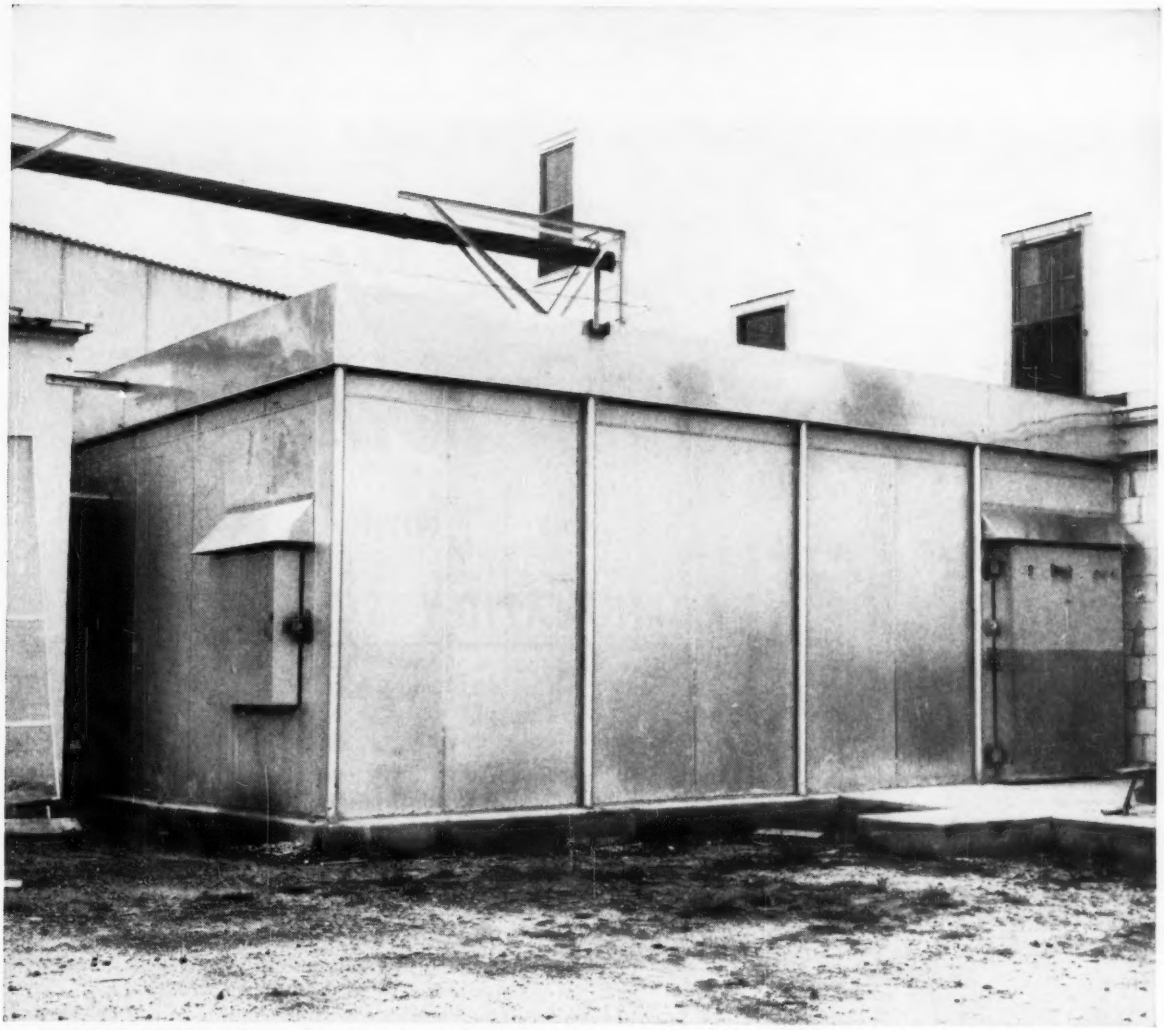

PURE FOOD COMPANY'S freezer box, located outside the firm's Mamaroneck, N. Y., plant, is made of Armorply faced sections as manufactured by Annapolis Yacht Yard, Freezer Box Division, Annapolis, Md. Patented locking device for joints eliminates sealing problems, lets you assemble, expand, or dismantle and move your temperature controlled rooms quickly and easily.

Now it's easy to add sub-zero storage—even outdoors—with Armorply rooms

This easy-to-assemble freezer room made of Armorply—metal-faced plywood—was built directly on a concrete slab—needs no other building. Armorply reflects away sun's heat, will not absorb odors, has high impact resistance, needs virtually no maintenance, and affords complete protection against vapor and vermin.

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☐ FREE: Please send me Armorply sample and descriptive booklet, "Facts about Weldwood Armorply."

☐ Please have your representative call with full details.

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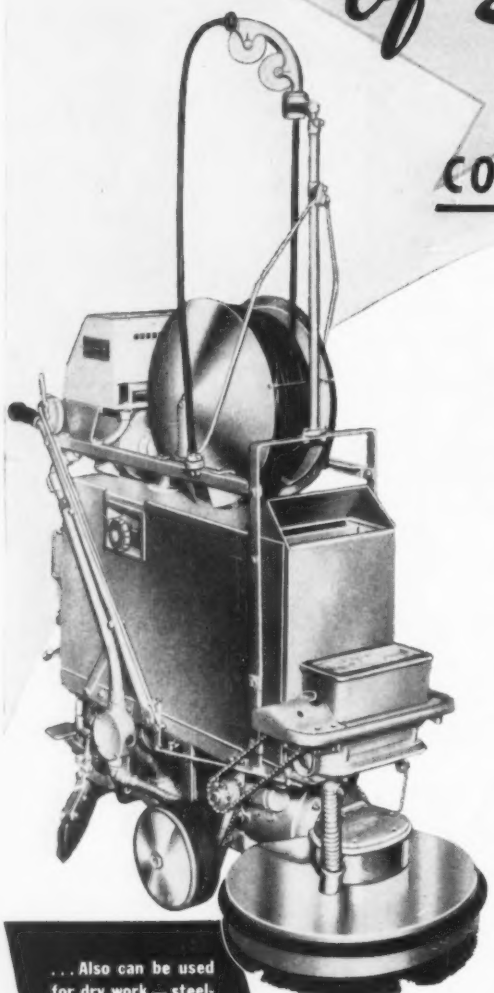
SMALL-AREA BUILDINGS...

Save 2/3 of Every Hour of Scrubbing Time

WITH A

COMBINATION SCRUBBER-VAC!



...Also can be used for dry work—steel-wooling, et cetera

(Powder Dispenser is an accessory)

Today, even buildings with but 2,000 to 15,000 sq. ft. of floor space can reap the labor-saving, cost-reducing benefits of *combination-machine-scrubbing*. Here's a *Combination Scrubber-Vac, Finnell's 418P* at left, that's specially designed for such buildings. This *electric* unit, with its 18-inch brush spread, cleans floors in *approximately one-third the time* required with a conventional 18-inch machine and separate vac.

The *418P* applies the cleanser, scrubs, and picks up (damp-dries the floor)—*all in one operation!* Maintenance men like the convenience of working with this single unit... the thoroughness with which it cleans... and the features that make the machine simple to operate. It's *self-propelled,* and has a *positive* clutch. There are no switches to set for *fast* or *slow*—slight pressure of the hand on clutch lever adjusts speed to desired rate. The powerful vac performs quietly. Compactly built, the *418P* also serves advantageously in larger buildings for the care of floors in narrow aisles and congested areas, and is available on lease or purchase plan.

Finnell makes *Scrubber-Vac Machines* for small, vast, and intermediate operations, and in *gasoline* or *propane powered* as well as *electric* models. From this complete line, you can choose the size and model that's exactly right for *your* job (no need to *over-buy* or *under-buy*). It's also good to know that *a Finnell Floor Specialist and Engineer is nearby* to help train your maintenance operators in the proper use of the machine and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 5701 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

Don't Be Left Behind by Fast Pace in '59

Every food manufacturer who wants to survive must have a sharp concept of the fast pace at which his industry is moving. Leaders take cognizance of this. They emphasize the dynamic surge that culminated in an outstanding 1958 performance despite the recession.

But '59 will be even more dynamic.

A surprising amount of additional push is revealed by FE's survey of industry plans (see page 41). Advertising expenditures will be 9% higher; market research up 17%—to take examples.

Leading food firms are going after a bigger share of consumer dollars. They are determined to protect their brands against private labels. And they are out to up their share of total food sales.

This means that '59 will be the most highly competitive year ever.

And while leaders are pushing up sales, they will oppose inflationary factors that boost prices or cut profits. They will reduce distribution costs by applying the total marketing concept—by integrating all phases of marketing.

They will try to offset rising costs in manufacturing too. Automation and more efficient materials handling and packaging are major areas on which they will concentrate.

In short, alert management men will practice the whole-man concept. They will consider every phase of operations as aimed at larger sales and better profits.

Shape your plans accordingly. Don't let the fast pace leave you and your company behind.

Get Your Additive Chips in Line, Pronto

It's amazing how many new and serious problems can be posed by a relatively simple piece of legislation. And that most certainly is the situation with the Food Additives Amendment.

Food manufacturers are put on the spot by the additives law, on five counts: 1. Safety of each ingredient. 2. Whether additives perform useful function and do not result in consumer deception. 3. Development of simple names for additives, for use on labels. 4. Safety of packaging material components that may be absorbed by the food. 5. Surety that processing does not adversely affect safety or quality of food unduly.

Remember! The burden of proof is on the proponent of an additive. You must see that everything you put into products, directly or indirectly, is approved or generally recognized as safe. You have until March 6, 1960, to present safety data, provided there is no evidence that a currently used additive is not safe.

Now is the time to get going—to start reviewing everything in your products, processes, and packages that might run you afoul of FDA.

You will find a preliminary list of 118 additives generally recognized as safe (more will be approved) in the article on page 46, along with references to other information on what is acceptable. Presented there, too, are pertinent points on the law and proposed definitions and regulations.

When in doubt, you can contact FDA as to information on the status of currently used additives.

Get your chips in line. FDA is friendly, but purposeful.

Kathabar® systems control all air dimensions... temperature, humidity and purity

You will earn maximum profits from an investment in comfort air conditioning if you specify a Kathabar "full-dimensional" system.

All over the country, Kathabar systems have improved labor productivity in hot and soggy weather, reduced absenteeism, and brightened employee morale.

These profits alone have justified the Kathabar equipment, but there are additional benefits which distinguish Kathabar air conditioning from conventional systems:

extra returns

The Kathabar system automatically conditions *all three* vital dimensions of air—temperature, humidity, and purity. Its control of humidity is a feature favored by users, because it eliminates the shock you feel when you enter or leave spaces conditioned by conventional refrigeration.

The system will either dehumidify or humidify.

specify bacteria count

Air purity is important for both comfort and health, and a Kathabar system contributes to each. Its chemical wash removes odors and dirt from the air. Even better, it kills over 97% of airborne micro-organisms. This drastically reduces the exposure of people and products to mischievous bacteria and molds.

With a Kathabar system, you can actually specify the maximum bacteria count you will tolerate in your space!

Dehumidification for comfort in a Kathabar system is usually accomplished with cooling tower or city water. Where refrigeration is included, the Kathabar system gives you top cooling efficiency with surprising savings in tonnage and horsepower. This is because the system handles latent loads with chemical absorption using lower cost water, and frees refrigeration to handle only the sensible loads.

Since dehumidification is direct (by a chemical absorbent) in a Kathabar system, you avoid the costs of overcooling and re-heating.

no carry-over

The absorbent will not vaporize or carry over into the air stream. With routine checking, it will maintain its effectiveness for years without replacement. The germicidal and bactericidal results are not affected by absorbent age or condition, or whether the system is humidifying or dehumidifying.

Be sure to check the Kathabar system if you want the greatest returns on your air conditioning investment.

who uses Kathabar systems

Kathabar systems make profits out of air for these industries:

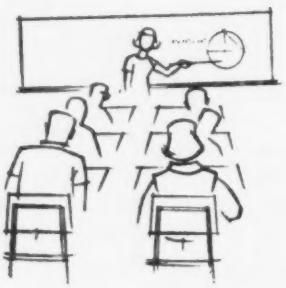
Atomic Energy	Machining
Breweries	Matches
Cake Mix	Marine
Candy	Meat
Cellophane	Offices
Cellulose	Ordnance
Cereals	Paper
Chemicals	Pharmaceuticals
Coffee	Plastics
Comfort	Printing
Compressors	Rockets
Cookies	Rubber
Electronics	Shellac
Explosives	Sugar
Film	Sanitaryware
Foundries	Testing
Gelatin	Textiles
Glass	Transformers
Glue	Transistors
Gum	Vacuum Tubes
Hospitals	Varnish
Hotels	Waterworks
Lacquer	Wire
Lenses	Yeast

how they use Kathabar systems

Many of these industries use Kathabar systems for comfort. Others use them to (1) maintain spaces at 80 F and 55% RH or lower; (2) obtain continuous air at sub-freezing dry bulbs and dew points; (3) eliminate condensation; (4) improve drying processes; (5) maintain spaces at specific low bacteria or mold count.

send description of your problem

AIR CONDITIONING & DRYING DIVISION
SURFACE COMBUSTION CORPORATION
2382 Dorr Street Toledo 1, Ohio



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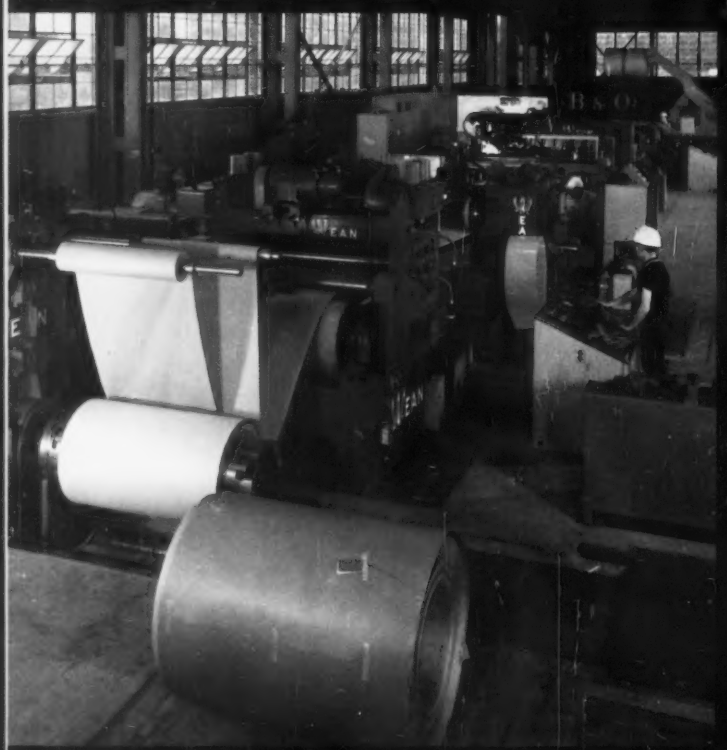
J & L's Completely New Stainless Mill . . .

designed and engineered to give you the fastest delivery on Quality Stainless Sheet and Strip

Now you can demand the quality you need and get the service you want from the most advanced stainless steel sheet and strip source in the industry. J & L's new Sendzimir Mill at Louisville, Ohio, is the result of years of planning by specialists to provide a new facility of such perfection that yield of the highest quality is assured.

J & L can now offer stainless sheet and strip to the most exacting specifications, producing stainless sheets to extremely close tolerances in widths up to 48 inches.

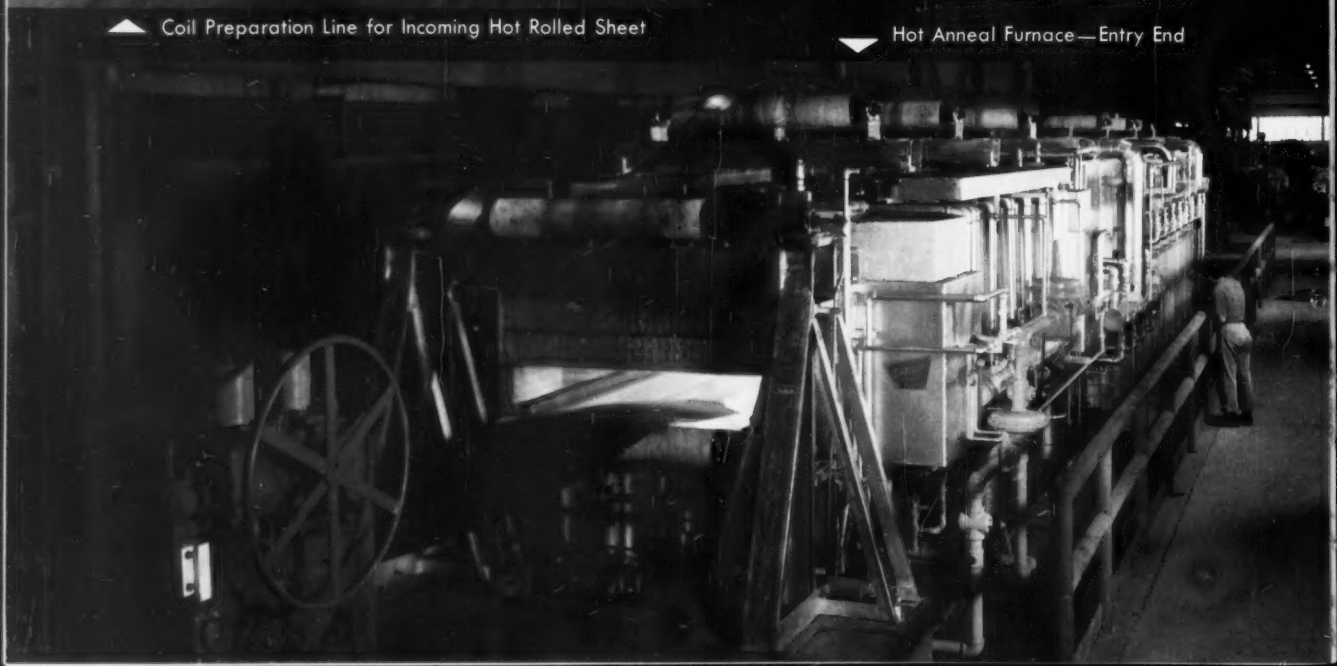
By efficient, flexible scheduling and adequate inventory support, J & L offers stainless steel buyers everywhere the fastest possible service.



▲ Coil Preparation Line for Incoming Hot Rolled Sheet

▲ The 54" Temper Mill

▼ Hot Anneal Furnace—Entry End

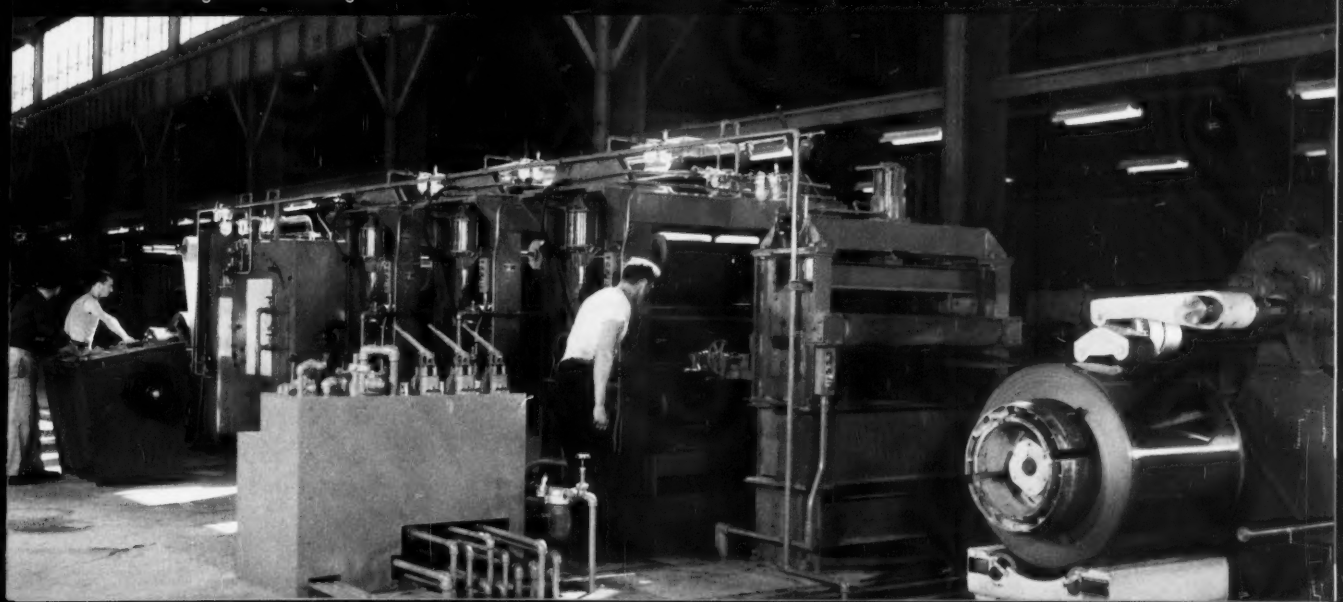


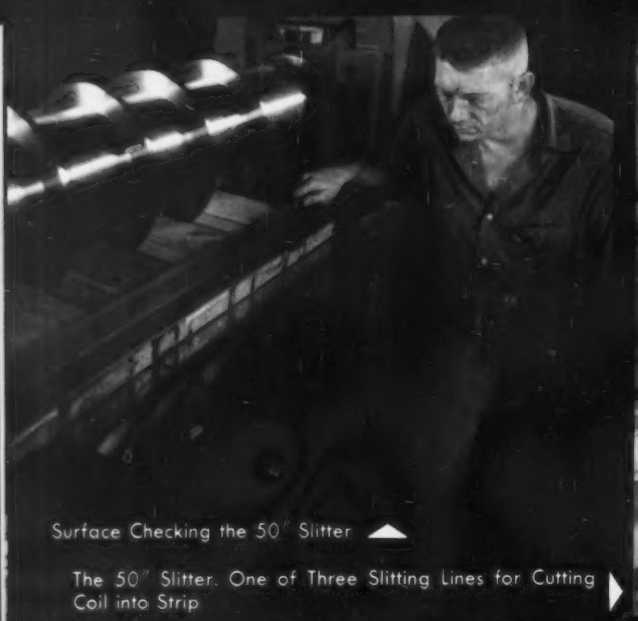
▲ The Sendzimir Mill

Interior View of the Intricate Mechanism of the Sendzimir Mill ▶

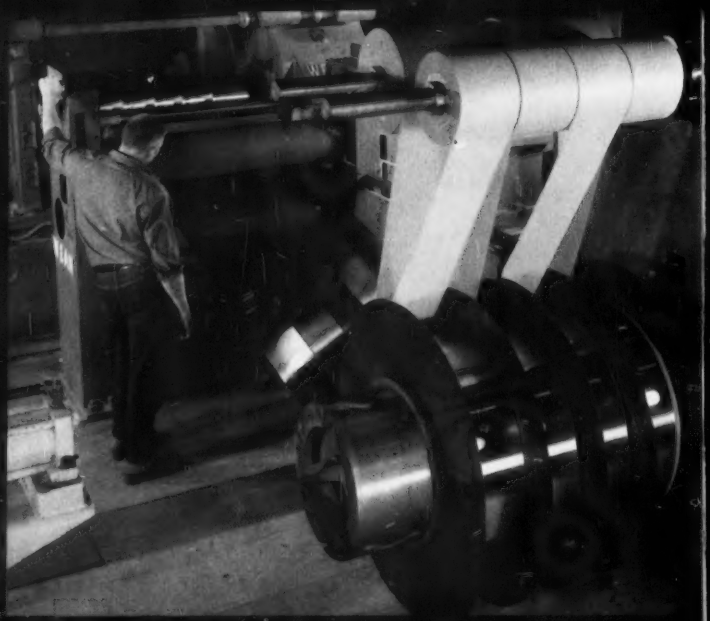
Scouring and Scrubbing Line ▼

▲ Cold Roll Anneal and Pickle Line—Discharge End



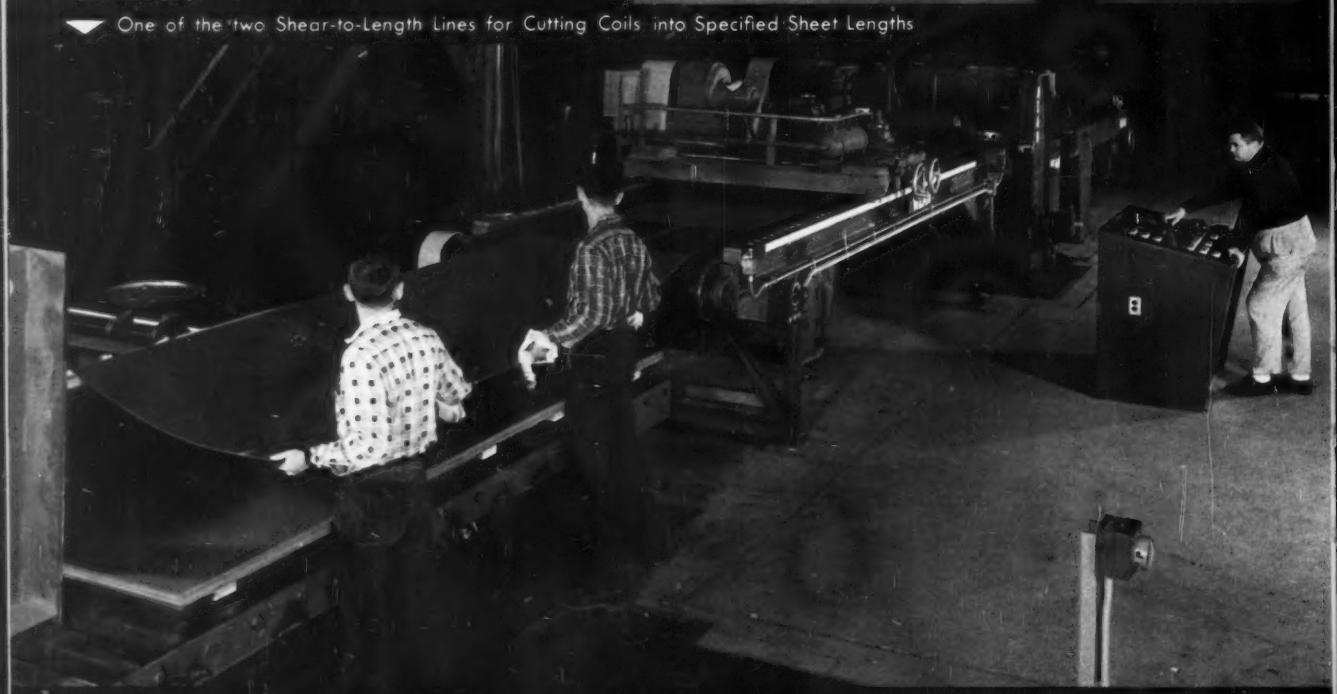


Surface Checking the 50" Slitter ▲



The 50" Slitter. One of Three Slitting Lines for Cutting Coil into Strip ▶

▼ One of the two Shear-to-Length Lines for Cutting Coils into Specified Sheet Lengths



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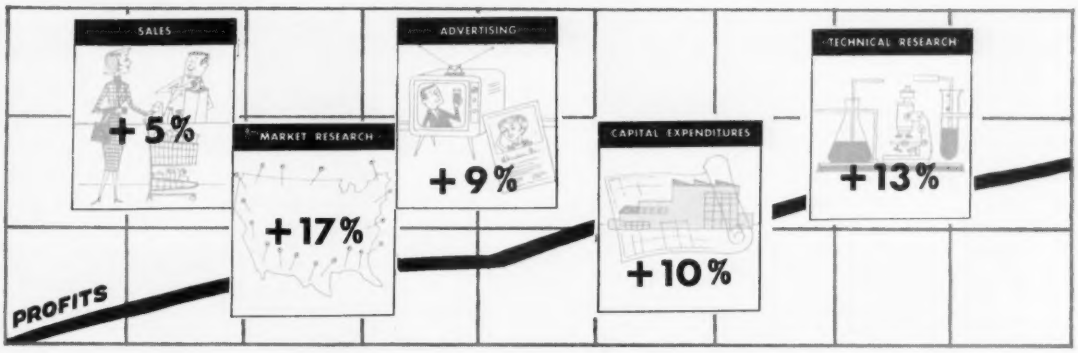
Key Factors in Bright Outlook



Survey Points Up Dynamic '59

FE's annual check finds executives optimistic over prospects . . . But big accent on research spotlights pressing need for sharper marketing programs, tighter cost controls, and consumer-slanted products as preparation for rougher competition ahead

ANOTHER GOOD YEAR for the food industry.

That's the '59 forecast of company presidents polled last month by FOOD ENGINEERING. Their consensus:

▶ **Sales—up 5%** (replies weighted by company size). Average increase (all replies): 8%.

▶ **Profits—a little fatter.**

▶ **Prices—steady or lower.**

▶ **Advertising—up 9%** (weighted basis). Average increase (all replies): 14%.

▶ **Market research—a hefty 17% increase** (weighted). Average (all replies): 16%.

▶ **Technical research—expanded by 13%** (weighted). Average (all replies): 15%.

▶ **Capital spending—up 10%.** Consensus saw strong climb (percentage figure is from McGraw-Hill's Economics Dept.).

Here's a rundown on factors that these chief executives (some of whom are quoted on p. 43) think you should keep your eye on as '59 unfolds.

The looked-for 5% sales gain may not appear sensational compared to the 10% and 15% hikes that have been predicted for other industries. But, remember, the boost represents a further improvement on what was a good year in '58, not a depressed one such as afflicted durable goods, for example.

For the first 10 months in '58, retail food stores pushed sales 5.8% ahead of '57, while food and beverage manufacturers edged their dollar volume up a smaller 0.5%. Helping the retailers' bigger jump were growth in non-foods and a 1.5-point advance in the price index.

Also notable is the fact that the presidents' optimism was voiced at the tail end of a third-quarter slowdown in food sales. Compared to '57, retail volume in the '58 second quarter was up 6.7%, but the third-quarter gain was shaved to 3.3%.

Buoying the confident outlook on food sales are: (1) Continuing population boom, which will add another 2.5-3.0 million people to the consumer market, and (2) a possible 5% uptrend in disposable personal income as the country's economic recovery picks up.

It's noteworthy, too, that other sources also look for rising food sales. Grocery Manufacturers of America predicts a 5.3% spurt in food expenditures, and National Assn. of Food Chains foresees a 6.5% boost in members' volume.

No Easy Path

Though industry leaders expect to rack up bigger sales this year, there's no doubt about the tougher competition they'll face both from within and outside the industry. Hence, the 9% increase ticketed for ad budgets.

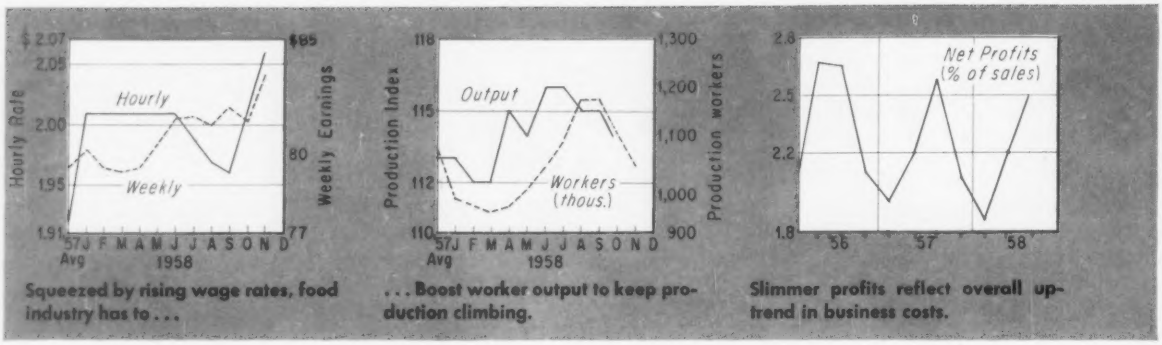
One internal industry force fueling stepped-up promotion is the naked threat of mushrooming retailer and wholesaler brands. As one chief executive warns: **"The private brands require us to court the consumer ever more fervently."**

The built-up ad programs will also be tooled to counter the stronger bid other consumer goods industries will make for a bigger share of the family spending dollar this year, establish a favorable climate for accelerated new product debuts, and build a stronger "share of the consumer mind" as a lever for shelf space.

Besides spending more ad dollars, food firms will aim for stronger impact-per-dollar through shrewder spending. Along this line, you'll see merchandising precisioned by a more accurate consumer fix, closer tie-ins with trade customers, displays tailored to store type, tighter contracts for cooperative advertising (where they're not abandoned), and sharper promotions.

To make their merchandising—and marketing—dollars more productive this year, industry leaders are boosting market research a walloping 17%. As one president stresses: "It's

THAYER C. TAYLOR
Associate Editor, "Food Engineering"



Squeezed by rising wage rates, food industry has to . . .

. . . Boost worker output to keep production climbing.

Slimmer profits reflect overall uptrend in business costs.

a low-cost premium on a valuable insurance policy."

Behind this is a continuing drive to make marketing operations more customer-centered. But before products can be matched successfully to consumers, food makers have to build up their fact library on why the housewife buys what she does, what she is looking for, and what she expects from her products.

You can be sure that a sizable chunk of the research is slated for new products (a major source of profit growth today). R&D work will also aim at developing new markets for existing products (to outflank price competition), and eliminating or improving slow movers that drag down profits.

Of special significance, 77% of the respondents to FE's poll plan to bring out new products or improved versions of present items. And the trend will continue in the direction of convenience foods—especially since the quick-fix specialties last year came through their severest market test yet (the recession) with their sales allure undimmed.

In fact, says Market Research Corp. of America, convenience foods sales for the first nine months last year were up a striking 9%. This rate was 50% better than the overall 6% gain in food store sales.

For further proof of how critical new and improved products will be to your marketing success, take this nugget from an A. C. Nielsen check of how 150 nationally advertised brands made out in '58: Those brands which didn't stand pat on product lines profited from a competitive gain of 63% as compared to a median 13% increase for all the brands.

Tilling the Fields

Improved distribution methods get an overwhelming vote from company presidents as a source of more productive market dollars. Targeted here are better delivery schedules to avoid out-of-stocks, modernized warehousing to keep capital-eating inventory at a minimum, and smoother transportation to keep pipelines filled.

Lowering of marketing costs is another high-priority research project among food firms today. Some of the ways they hope to do this are: Increasing volume per stop, coordinating promotion and selling efforts, maintaining a balance between volume and margin, reducing unit expenses through large-volume outlets, and opening new markets with lower introductory outlays.

Paralleling the increased emphasis on marketing research is a 13% increase in technical research—aimed at streamlining in-plant operations. Forcing this are steady uptrends in labor costs—production workers last year hiked their hourly rate from $1.92 to $2.00, and took home fatter paychecks (gross weekly earnings up from $77.93 to $80.90).

And there are at least three portents pointing to rougher sessions at the bargaining table for those firms with contract renewals due in '59. These are: (1) Coal miners' $2-a-day pay raise will encourage other unions to press stronger demands this year; (2) rivalry between Teamsters Union and AFL-CIO, which has already pincered two Miami breweries, as to who can get more for their members; and (3) this spring's steel contract talks, where a pay boost will be reflected later in higher container and equipment costs.

Higher price tags on materials and supplies are also adding to the cost squeeze. According to USDA, food firms last year paid 3.8% more for their metal containers, 8.9% more for glass containers, 2.5% more for machinery, 1.2% more for construction, and 5.2% greater for trucks.

Thus, it's not surprising to find practically every company president citing materials handling and automatic packaging as the two biggest requisites to better in-plant cost control. Here, the dual aim is to eliminate as much hand labor as possible, and to automate straight-through operations by greater integration of all the steps ranging from raw materials handling to packing of cased goods.

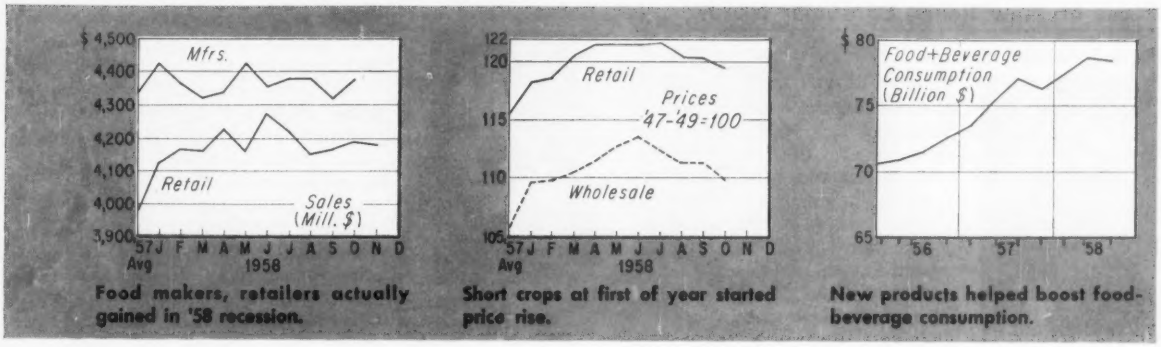
With the industry committed to bigger research budgets in the field and in the plant, it's interesting to note where the fact-finding is being pushed. Allowing for company size, replies to FE's poll indicate that 47.6% of the research dollars are for new product development, 9.3% for packaging, 25.3% for processing, and 17.8% for "miscellaneous." On a straight average basis, the research mix is: 36% for new products, 16% for packaging, 35% for processing, and 13% for "other."

Here, again, you can see the great importance attached to new products as the key to better profits. And, to better in-plant operations as the means to offsetting rising costs.

Note to Stockholders

The payoff from this stepped up research, plus the expected higher sales volume, brightens the profit outlook, the chief executives feel. On a weighted basis, 87% of the firms believe that last year's thinned down profits—which, according to GMA's Paul B. Willis, slipped from 2.8% per sales dollar to 2.7%—will get a little fatter this year.

And with profits taking a turn for better, food and beverage makers are plunking down 10% more capital expenditures, partially reversing a 15% cutback in '58. Behind this turnabout are three factors: (1) Need



Food makers, retailers actually gained in '58 recession.

Short crops at first of year started price rise.

New products helped boost food-beverage consumption.

to reduce unit costs with modern equipment, (2) necessity of tooling up for essential new product development, and (3) the high degree of obsolescence in today's food plants.

At least 55% of the food industry's capacity is more than 10 years old, an age-line that's often considered the turning point for efficiency (see FE Oct. '58, p. 56).

Although food executives look for higher sales and profits, they hope to accomplish this without higher prices. Close to two-thirds—or 64%—of the presidents feel that prices will remain stable or go lower.

However, the others contend strongly that they've absorbed as much of the rising costs as they possibly can, and that further increases will have to be passed along as higher prices. They believe that such cost advances could push prices up 1.8%.

Behind the more optimistic view on prices are the benefits flowing from tighter cost control and abundant supplies of foodstuffs. Government forecasters say pork and beef supplies will be up, milk production more in balance with consumption than in any year since '52, poultry and eggs plentiful, and supplies of most processed fruits (citrus excepted) and vegetables adequate to maintain present consumption.

—*End*

Top Executives Discuss Company Plans

Integration, Service for Solid Growth

Harold W. Comfort, Borden

RISING COSTS and narrowing margins are forcing concentration on the "total marketing" concept which integrates preliminary market research, product testing, test marketing, advertising, promotion, and distribution.

Distribution is the area offering the greatest opportunity for cost reduction. There will be more "horizontal expansion" of product mix, with salesmen handling wider lines of related items, and more use of the "regional concept." Each region will be an entity, with the distribution pattern molded to the area's needs and potentials.

Higher technical research budgets will lead to greater labor savings, more efficient machinery, and more new products. More convenience items will be introduced as a means of increasing margins.

Since the service function can be performed more efficiently on a mass scale, the small additional cost of a convenience product is a charge most consumers are willing to pay.

More full-scale equipment will be used in pilot plants to cut down costly interruption of manufacturing plant schedules and reduce shut-down during changeover. There will also be wider use of integrated research teams, in which technicians and plant personnel work together on a project, from the laboratory to the production line.

C. G. Mortimer, General Foods

HOPEFULLY, '59 can be a turning point which will bring a slowdown in some troublesome trade practices—gimmick warfare, excessive "deals," and other "give-aways"—which do not contribute to industry growth nor provide consumer service.

Closer cooperation between all industry segments is the key to better service. At GF, we are striving for better understanding of our customers' problems and the improvement of service, in order to make it more attractive for them to do business with us.

One step we are taking is a new "distribution-sales service" concept, custom-tailored to the needs of individual distributors. By carefully scheduling combination carload and truckload shipments of a number of our products, and getting them to customers on a dependable basis—even on the day of the week that suits them best—we help distributors reduce their capital investment through lower inventory levels. Some have been cut by as much as 25%.

Focus on New Items, Consumer Needs

Paul S. Gerot, Pillsbury

NEW PRODUCTS will appear at an even greater rate. Consumers accept new items where they show value in the form of added convenience and service, and will continue to accept them where a definite value is offered.

Continued emphasis will be placed on more efficient distribution because of the growing pressure on shelf space.

In manufacturing, there will be continued emphasis on controlling and decreasing costs. **Up to now, the food industry has absorbed much of the general rise in business costs. It appears now that some cost increases will have to be passed on in the form of higher prices.**

George H. Coppers, National Biscuit

MAJOR MARKETING trends will include a continuation in the struggle for shelf space. New products, resulting from intensive research and backed by aggressive advertising, as well as a constant flow of merchandising ideas to stimulate consumer interest, are necessities in today's competitive atmosphere.

Rising pay rates make more automation and more laborsaving machinery "musts."

H. J. Heinz II, Heinz

NEW PRODUCTS will succeed or fail accordingly as they are competently dealt with at every stage of their development—from the first idea to design, tryouts, research and testing, scale-up, production, promotion, advertising, selling, and merchandising in test markets, and, finally, to full marketing.

In the last 12 years, many new products which disappeared were good ideas that were badly marketed, or they were "gimmicks" which were well marketed but lacked product value. In between were products where one weak link caused the chain to part—faulty production engineering, for example.

H. W. Lay, H. W. Lay & Co.

INCREASED SALES will continue because of population growth, greater demand for convenience products, and better appetite-tempting foods.

Manufacturing emphasis will be on automation to narrow the spread between raw materials and finished goods that's caused by increased packaging costs of convenience items.

L. Evert Landon, Nalley's

THE RUSH to get new convenience foods into stores is resulting in too many introductory campaigns of products which have not been thoroughly tested.

Heavy introductory offers create an unusual amount of dealer activity, resulting in decreased promotion of the more stable lines. This means that heavy deal offerings must then be made on well-established products to get them the attention they deserve.

Orderly screening of old products should be as much a part of a new product development program as the introduction of new items.

P. M. Jarvis, Swift

THE MEAT OUTLOOK is encouraging as the result of increased livestock supplies coming to market. Number of hogs marketed may be up 12%.

With steadily expanding population, consumer demand should continue strong. Consumers seek convenience in kinds of products, packages, ease of home preparation, market location, arrangement, and product display—and this is what the industry must give them.

John M. Whittaker, New England Confectionery

TODAY'S BUSINESS has become so engrossed with meeting competition in the market place, and reducing production costs, that it has lost sight of the fundamental principle of making a profit through delivering true consumer satisfaction. Consumer orientated service and product quality are not getting the attention from management that other elements receive.

Printing "new" or "improved" upon a package when such qualities are not there does more harm than good in the long run. Product improvements must be tangible to get real sales increases.

W. T. Brady, Corn Products

WE HAVE GREAT hopes this will be the best year we've ever known—based on the country's improved economic climate and the abundance of those agricultural commodities most important to us.

Today's homemaker is a highly sophisticated shopper. She insists on reputable brand names of known quality, wants convenience and style.

Increasing population and ever improving living standards have made possible the dawn of the supermarket age overseas.

Private Labels, Costs Big Challenges

John M. Fox, Minute Maid

TRENDS will reflect a major revival of chain-store private labels, with increasing emphasis on high velocity items, for two prime reasons:

Chains are (1) becoming more aware of the need for an exclusive brand with which to hold their customers and supplement advantages found in nationally advertised brands. And (2) they exercise almost complete control over available display areas in the major food outlets.

The national brands' answer lies in demonstrably superior products that are not available under the private labels—coupled with aggressive and efficient consumer advertising.

Grover D. Turnbow, Foremost

MOST SIGNIFICANT dairy development will be the opening of new foreign markets.

People in milk deficit countries are becoming more aware of the nutritional value of milk, and are eager to accept it as part of their normal diet.

There will be more dairy company mergers. Not too many years ago, a 1,000 gal. a day milk plant could make money. Now, due to higher labor costs, taxes, etc. one must do many times that amount to justify investment.

Need to expand and seek greater efficiency is a by-product of increasing business costs. However, we must accept the fact that **increased costs are generally tied in with increasing buying power, and this means greater marketing opportunities.**

With cities spreading into rural areas, several states, which are good milk producers today, will become milk deficit areas. This is something to think about when planning future plants.

W. B. Murphy, Campbell Soup

A LARGE AMOUNT of management time is devoted to offsetting the continued inflation in the cost of goods and services. The trend toward higher costs has continued virtually unabated despite the recent recession.

With the constant increases in wages, it is necessary to have greater productivity all the way from the farm through the retail store.

Research must be given its proper emphasis because the food business is highly dependent upon the natural sciences. And the natural sciences, possibly because they are the most difficult, are the least developed and have the furthest to go.

L. Ratzesberger, Illinois Canning

ONE OF THE greatest boons to plant improvement would be quicker write-offs for capital assets. This would lower costs for the packer, as well as boost machinery manufacturers' operations.

Machinery obsolescence, new products, and changes in living modes and eating habits are occurring so fast, and the added factor of inflation is so costly, it is difficult to modernize fast enough and provide sufficient capital under present laws to keep pace.

John A. Robins, Fairmont

IN THE DAIRY FIELD, prospects are for relatively stable prices for most raw materials. Increasing costs of labor, supplies, and equipment will exert pressure on profits, except as offsetting economies can be effected. These conditions pose a serious threat of "profitless prosperity" unless management takes forceful action.

Revolutionary changes or miracle solutions are not likely to provide most of the answers. Among the promising areas are further atomation in production, greater efficiency in distribution, more revealing accounting methods, economic packaging, and more effective merchandising and advertising.

Wesby R. Parker, Dr. Pepper

MARKETING, to be effective, will be slanted in the direction of the American housewife, the nation's No. 1 buyer.

Public clamor for increased quality has brought manufacturers face to face with the realization that the customer is becoming more cautious.

In the soft drink field, there is a serious urgency in giving consumers due consideration as to their desires in package size and design. We must modernize distribution patterns to fit retailers' needs instead of selfishly forcing operators to conform to our schedules.

W. G. Karnes, Beatrice Foods

THE DAIRY SECTOR will continue to provide the highest nutritive values at a cost level among the lowest of all food categories.

Bright outlook for dairy products is based on figures which show that butter prices dropped from a base of 100 in '54 to 94 in '58, eggs from 100 to 79, and milk, per quart, remained at the same level.

For the industry in general, we expect a continuation of high production and supply with little, if any, rise in prices.

KEY POINTS

1. Prior OK by FDA required
2. Burden of proof is on you
3. Tolerances now permissible
4. Additives must be "generally recognized" as safe
5. Importance of food additives officially acknowledged

KEY QUESTIONS

1. Are tolerances for coal-tar colors permissible?
2. What additives are considered safe?
3. How is FDA approval obtained?
4. Does law stymie progress?
5. Is there any appeal from FDA regulations?

Know Your New Additive Law!

Vital points of regulation and procedure unfold as FDA and industry interpret and implement provisions. Effective date is March 5

NEW PROBLEMS and responsibilities are placed on technologists and management by the Food Additives Amendment of 1958. Enacted September 6, the amendment becomes effective March 5.

Technical and legal brains of the food and chemical industries and FDA have been spelling out a host of details that stem from the rather simple law. They have been elaborating the meaning of the provisions to determine their scope, interpreting them to evaluate their precise meaning, and establishing procedural regulations.

Of particular current interest to food and chemical manufacturers, they have been developing a list of food additives generally recognized as safe.

To help untangle the complexities of the new law, and to initiate industry-government cooperation, a two-day conference was sponsored by The Food Law Institute. Held in Washington, November 24 and 25, the conference involved interpretative talks by FDA and industry authorities.

Food, chemical, and government authorities accept the new law as a workable compromise of provisions sought by different groups. FDA views it as introducing "a new era in food legislation"—providing strong consumer protection, yet permitting technical progress.

Some spokesmen in industry see the law as satisfactory so long as FDA administers it fairly and reasonably. But they believe that the power is there for FDA to stymie progress should its officials take a narrow-minded, zealous stand in respect to the use of new additives.

But definitely on the credit side are these four factors:

1. **The law recognizes the need to use additives.**

2. **It permits tolerances to be established—except for coal-tar colors, which are not covered by the amendment.**

3. **It should tend to remove any fear of additives on the part of the consuming public.**

4. **It is expected to protect the industry against the hazard of a bad public reaction that would stem from use of dangerous additives by any irresponsible party.**

At the same time, the law puts the burden of proof of safety on the proponents of new additives. This can mean extensive and expensive testing. And as one observer put it: "You better be sure you have a winner before you start."

The law points a questioning finger at every additive now in use. This means that food manufacturers must check every product to make certain that additives in it are on the "generally recognized as safe" list, or have prior Government approval. Test data will have to be developed to petition for FDA approval in some cases. Formulation may have to be changed in some instances. Additional technical manpower and facilities often will be necessary.

Most certainly, every food manufacturer using additives must become thoroughly acquainted with the amendment and all its ramifications. And he will have to keep continuously abreast of FDA actions regarding additives.

What the Law Requires

The substances covered by the new amendment are food additives not generally recognized by competent experts as having been adequately shown to be safe under the conditions of their intended use.

It applies to substances added intentionally to foods, as well as those that may reasonably be expected to become a component of food incidentally, or to affect its characteristics adversely in respect to safety.

Substances entering a food from a package, a process, or during transportation or storage are included.

Use of ionizing radiation in food processing is covered and must be

FRANK K. LAWLER
Editor, "Food Engineering"

RECOGNIZED AS SAFE

It is impractical to list all substances that are generally recognized as safe for their intended use. However, by way of illustration, the Commissioner regards such common food ingredients as **salt, pepper, sugar, vinegar,** baking powder, and monosodium glutamate as safe for their intended use.

In addition, the following list and table include some substances that are regarded by the Commissioner as generally recognized as safe for such uses.

Also safe are additives on list of Permitted Chemical Additives, prepared by Meat Inspection Div., USDA, Nov. 8, 1957. Uses and amounts are specified.

Buffers and Neutralizing Agents—Acetic acid, aluminum ammonium sulfate, aluminum sodium sulfate, aluminum potassium sulfate, ammonium bicarbonate, ammonium carbonate, ammonium hydroxide, ammonium phosphate (mono- and dibasic-), calcium carbonate, calcium chloride, calcium citrate, calcium gluconate, calcium hydroxide, calcium lactate, calcium oxide, calcium phosphate,

established as safe before commercial use.

Additives commonly used in food before Jan. 1, 1958, and generally recognized as safe because of experience based on such use are exempt.

These include substances previously given informal sanction or approval by FDA under the Food, Drug & Cosmetic Act, and by the Department of Agriculture under either the Meat Inspection Act or the Poultry Products Inspection Act. Pesticide residues are dealt with under the Pesticide Chemicals Amendment of 1954 (Sec. 408 of FD&C Act).

Thus a great many ingredients will not have to go through the clearance procedures of the bill.

Specific Procedures

Briefly, the requirements and provisions are:

▶ A company that wants to promote a new food additive will have to test it for safety on animals, and submit the results to FDA.

▶ FDA will study the data and reach an independent decision. If the evidence clearly demonstrates that the material is a suitable component of food, then FDA will issue a regulation stating safe permissible uses for the material.

▶ FDA is not permitted to sanction a use of an additive that promotes deception of consumers.

▶ When Government and industry are unable to agree about the contemplated use of food additives, the bill permits administrative and judicial appeal procedures. Industry has a right to a public hearing on the suitability of a proposed additive, as well as the right to appeal an adverse Government decision to the Circuit Court of Appeals.

On the judicial review, the administrative findings of fact must be sustained if they are supported by substantial evidence when considered *on the record as a whole.*

▶ The Administrator may issue a regulation where he deems it necessary to protect public health.

What Industry Must Do

Industry will need to develop the data necessary to establish the safety of those additive uses that do come under the amendment and have not already been cleared.

The law allows 18 months from the date of its passage (Sept. 6, 1958) for clearance of additives in use prior to Jan. 1, 1958.

Industry also must label foods to show the common names of ingredients of the foods. To inform the consumer successfully of the benefits from use of additives, the industry needs to adopt simple names for many of the chemicals used.

Definitions and Regulations

Here are significant excerpts from "Proposed Definitions and Procedural and Interpretative Regulations," issued by FDA:

"**Food additive**" includes all substances the intended use of which results or may reasonably be expected to result, directly or indirectly, either in their becoming a component of food or otherwise affecting the characteristics of food.

A material used in the production of containers and packages is subject to the definition if it may reasonably be expected to become a component, or to affect the characteristics, directly or indirectly, of food packed in the container.

A substance that does not become a component of food, but that is used, for example, in preparing an ingredient of the food to give a different flavor, texture, or other characteristic, may be a food additive.

Substances other than those listed: Upon written request, setting forth the specific product and a specific usage, the Commissioner will advise interested persons whether such use of such product has been sanctioned.

Standards of identity list additives sanctioned for use in foods for which standards have been prescribed. No such sanction will be withdrawn or modified without prior notice and a statement of the reasons for the action.

Criteria for establishing safety of food additives will be those outlined by the Food Protection Committee of the National Research Council in *Principles & Procedures for Evaluating Safety of Intentional Chemical Additives in Foods* (Jan., 1957, edition).

Petitions shall include the following:

A. Name and all pertinent information concerning the food additive, including chemical identity and composition, or a statement that such information is not available and why it is not.

When the chemical composition is not known, the petition shall contain information, regarding method of manufacture and analytical controls to establish that it is of reproducible composition.

If the food additive is a mixture

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citric acid, lactic acid, linoleic acid, magnesium carbonate, and magnesium oxide.

Also, oleic acid, potassium acid tartrate, potassium bicarbonate, potassium carbonate, potassium citrate, potassium hydroxide, sodium acetate, sodium acid pyrophosphate, sodium aluminum phosphate, sodium bicarbonate, sodium carbonate, sodium citrate, sodium hydroxide, sodium phosphate (mono-, di-, tri-), sodium potassium tartrate, sodium sesquicarbonate, sulfuric acid, and tartaric acid.

Colors—Caramel, carbon black, charcoal, titanium dioxide, and ultramarine blue.

Preservatives (sequestrants)—Calcium acetate, calcium chloride, calcium citrate, calcium diacetate, calcium gluconate, calcium hexametaphosphate, calcium phytate, citric acid, dipotassium phosphate, disodium phosphate, monocalcium acide phosphate, monoisopropyl citrate, and potassium citrate.

Also, sodium acid phosphate, sodium citrate, sodium diacetate, sodium gluconate, sodium hexametaphosphate, sodium metophosphate, sodium phosphate (mono-, di-, tribasic-), sodium potassium tartrate, sodium pyrophosphate, sodium tartrate, sodium tetrapyrophosphate, sodium tripolyphosphate, and tartaric acid.

Preservatives (antimycotics)—Calcium propionate, potassium sorbate, propionic acid, sodium propionate, sodium sorbate, and sorbic acid.

Preservatives (antioxidants)—Ascorbic acid, ascorbyl palmitate, calcium ascorbate, erythorbic acid, sodium ascorbate, and tocopherols.

Preservatives (general)—Acetic acid, citric acid, phosphoric acid, and sorbitol.

Miscellaneous—Aluminum sodium sulfate, aluminum sulfate, butane, tribasic calcium phosphate, carbon dioxide, carnauba wax, glycerin, glycerol monostearate, helium, magnesium carbonate and magnesium hydroxide.

Also, monoammonium glutamate, nitrogen, papain, propane, propylene glycol, triacetin (glyeryl triacetate), tricalcium phosphate, sodium carbonate, sodium phosphate, and sodium polyphosphate.

Nonnutritive Sweeteners — Calcium cyclohexyl sulfamate, calcium saccharin, saccharin, sodium cyclohexyl sulfamate, and sodium saccharin.

Nutrients—Ascorbic acid, calcium carbonate, calcium oxide, calcium pantothenate, calcium phosphate (mono-, di-, tribasic), calcium sulfate, carotene, ferric phosphate, ferric pyrophosphate, ferric sodium pyrophosphate, ferrous sulfate, reduced iron, l-lysine monohydrochloride, niacin, niacinamide, and α-pantothenyl alcohol.

Also, potassium chloride, pyridoxine hydrochloride, riboflavin, riboflavin-5 phosphate, sodium pantothenate, sodium phosphate (mono-, di-, tribasic), thiamine hydrochloride, thiamine mononitrate, tocopherols, α-tocopherol acetate, vitamin A, vitamin A acetate, vitamin A palmitate, vitamin B_{12}, vitamin D_2, vitamin D_3.

Stabilizers—Agar-agar, carob bean, carrageheen, and guar gum.

Emulsifying Agents—Acetyl tartaric acid esters of mono- and diglycerides, except lauric; mono- and diglycerides, except lauric; monosodium phosphate derivatives of mono- and diglycerides, except lauric; and propylene glycol.

Additives for which uses and quantities are specified are listed in accompanying table.

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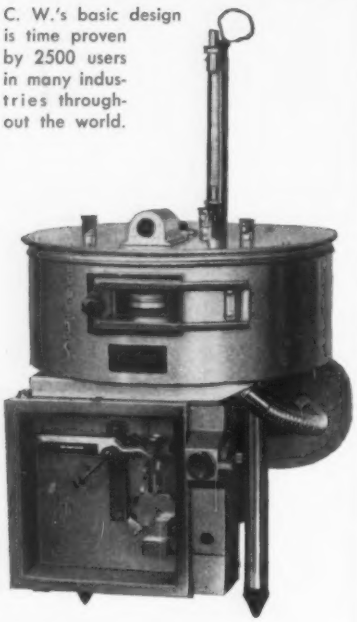

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SPECIFIED USES AND QUANTITIES

Product	Tolerance	Uses
	MISCELLANEOUS	
Aluminum calcium silicate	2%	Table salt
Calcium silicate	5%	As an anticaking agent in baking powder
Calcium silicate	2%	As an anticaking agent in table salt
Caffeine	⅓ to ½-grain in 6-oz. bottles of cola drinks	In cola drinks
Ethyl formate	15 parts per million	When used as fumigant for cashew nuts
Magnesium silicate	2%	Table salt; anticaking agent
Ox bile extract U.S.P. (solids)	0.01%	Egg whites
Taurocholic acid (or its sodium salt)	0.01%	do.
Tricalcium silicate	2%	As an anticaking agent in table salt
Triethyl citrate	0.25%	Egg whites
	NUTRIENTS	
Copper gluconate	0.005%	In any food
Cuprous iodide	0.01%	Used in table salt as source of dietary iodine
Potassium iodide	0.01%	do.
	PRESERVATIVES Antimycotics	
Caprylic acid	...	Antimycotic in cheese wraps
Potassium bisulfite	...	Not in meats or in foods recognizable as a source of vitamin B
Potassium metabisulfite	...	do.
Sodium benzoate	0.1%	No special use specified
Sodium bisulfite	...	Not in meats or in foods recognizable as a source of vitamin B
Sodium metabisulfite	...	do.
Sodium sulfite	...	do.
	Antioxidants	
Benzoic acid	0.1%	No special use specified
Butylated hydroxytoluene	0.02%	Edible fats and oils
Butylated hydroxyanisole	0.02%	do.
Dilauryl thiodipropionate	0.02%	do.
Gum guaiac	0.1%	do.
Nordihydroguaiaretic acid	0.02%	do.
Propyl gallate	0.02%	do.
Thiodipropionic acid	0.02%	do.
	General	
Sulfur dioxide	...	Not in meats or in foods recognizable as a source of vitamin B
	Sequestrants	
Isopropyl citrate	0.02%	No special use specified
Sodium thiosulfate	0.1%	Salt
Stearyl citrate	0.15%	No special use specified
	STABILIZERS	
Magnesium stearate	...	As migratory substance; use in manufacturing plastic film for wrapping foods
	SURFACTANTS	
Cholic acid	0.01%	Egg white
Desoxycholic acid	0.01%	do.
Glycocholic acid	0.01%	do.

of chemicals, the petition shall supply a list of all substances used in the synthesis, extraction, or other method of preparation, regardless of whether they undergo chemical change in the process.

If the food additive is one that is likely to be unstable, the petition shall include stability data.

B. Amount of the food additive proposed for use and the purposes for which it is proposed, all directions regarding use, and specimens of labeling proposed.

C. Data establishing that the food additive will have the intended physical or other technical effect and the amount necessary to accomplish this.

D. Results of tests by practicable methods to determine the amount of the food additive in the finished food and of any substance formed in or on food because of its use.

E. Full reports of investigations made with respect to the safety of the food additive.

F. Proposed tolerances for the food additive, if tolerances are required to insure safety.

Data will be kept confidential when submitted with a petition *unless it is necessary to reveal in administrative or judicial proceedings.*

Within 90 days after filing of the petition, the Commissioner will forward for publication in the *Federal Register*, a regulation prescribing the conditions under which the food additive may be safely used.

The Commissioner may extend the 90-day period for not more than 180 days.

A regulation shall become effective upon publication in the *Federal Register*.

A statement of objections shall not be accepted for filing if:

1. It is filed more than 30 days after the date of publication of the order in the *Federal Register*.

2. It fails to establish that the objector will be adversely affected by the regulation.

3. It does not specify with particularity the provisions of the regulation to which objection is taken.

4. It does not state reasonable grounds for each objection raised.

Hearings shall be conducted by a presiding officer designated by the Commissioner.

At the hearing, the person whose objections raised the issues to be determined shall have the burden of proof.

BAKING NEWS FROM Pfizer

Quality Ingredients
For the Food Industry
For Over a Century

NEW INTEREST IN GLUCONO-DELTA-LACTONE AS ACIDULANT IN "INSTANT" DOUGH MIXES PERMITS BREAD PRODUCTION IN 50 MINUTES INSTEAD OF 5 HOURS.

Currently, the baking industry is evaluating new chemical leavening systems which contain glucono-delta-lactone. Following the presentation of reports at a meeting of the American Association of Cereal Chemists and Institute of Food Technologists by scientists from the Quartermaster Food and Container Institutes, many companies are evaluating new markets for products containing glucono-delta-lactone.

The reports deal with an "instant" bread mix containing glucono-delta-lactone as the acidulant. With this mix no conventional yeast fermentation and proofing steps are needed . . . chemical leavening permits production of finished bread in 50 minutes as compared to approximately 5 hours for a yeast-leavened loaf. The bread has standard shape, color, grain and texture. Moreover, this bread does not have the objectionable aftertaste found with some leavening salts.

In addition to its use in bread mix, glucono-delta-lactone has proven effective as the acidulant in prepared cake mixes, angel cake, pound cake, biscuits and roll mixes. In laboratory evaluations, Pfizer Technical Service found that the slow hydrolysis rate of glucono-delta-lactone in cold water coupled with an increased hydrolysis rate at elevated temperatures make it an excellent acidulant for baked products which can utilize a chemical raising action.

Fumaric Acid & Cream of Tartar

Other interesting Pfizer acidulants for use in chemical leavening systems are fumaric acid and cream of tartar. Both of these products have limited solubility in cold water which inhibits the reaction with bicarbonates with a resulting small evolution of gas during initial stages of mixing. An increase of solubility at elevated temperatures results in major carbon dioxide evolution at baking temperatures.

New Pfizer Sorbistat®-K

Sorbistat-K overcomes the problem of water solubility of sorbic acid. Up to 40% solutions can now be prepared rapidly by simply dissolving in water. Because of this improved solubility many companies have found in recent experience that the new potassium salt has proved more effective than the acid.

Both Sorbistat (sorbic acid, Pfizer) and its water-soluble potassium salt, Sorbistat-K (potassium sorbate, Pfizer) are effective growth inhibitors for many yeasts and molds which cause spoilage of baked goods.

Generally, Sorbistat and Sorbistat-K are effective at pH 2.0-7.0. In the baking industry, Sorbistat-K is the product of choice in chemically-leavened baked products due to its wide range of effectiveness at comparatively low levels.

Extensive laboratory evaluations have shown Sorbistat-K to be usually effective at approximately one fourth the level of propionate and at about one third the level of benzoate. In addition, at practical use levels Sorbistat-K does not impart any off-flavor to the food product.

Specifically, Sorbistat-K has proven effective in chocolate cake, pound cake, yellow cake, white cake, cheese cake, angel food cake, fruit cake and marble cake. It is also of value in many pies, filled sweet goods and cookies. The exact level of use will vary with the type of food, degree of protection needed and the amount of contamination present.

Sorbistat-K, because of its excellent water-soluble properties, can be added directly to batters in the dry form or as a water solution of potassium sorbate. If you would like further information on glucono-delta-lactone, fumaric acid, cream of tartar or Sorbistat-K, write **CHAS. PFIZER & CO., INC., Chemical Sales Division, 630 Flushing Avenue, Brooklyn 6, New York. Branch Offices: Clifton, N. J.; Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Texas.**

Aluminum Foil Packaging – Developments in Overwraps

Report No. 18 of a Series by Reynolds Metals Company

WHEN the old-fashioned grocer wrapped a box of kitchen matches in brown paper – that was an early overwrap. But packaging in the modern sense means *pre*-packaging. It was only when the product reached the grocer already wrapped, with the brand name printed on the wrapper, that the age of the overwrap began as we know it today.

Then as now, product protection and identification were the objectives, and today's carton overwraps demonstrate the tremendous progress made along both lines. Reynolds Aluminum Foil overwraps, applied to packages by automatic machines at rates exceeding 100 units per minute, are a far cry from the early paper wraps applied by hand.

The first step in protection, beyond plain paper, was waxed paper. Then came other materials – plastic films such as cellophane and cellulose acetate, and aluminum foil. This latter, which the Reynolds Metals Company was first to develop into overwraps, has proved itself superior in protective qualities – superior even to the newer plastic films.

The best demonstration of this superior protection is by the water vapor transmission rates of various overwraps on finished packages. The comparative rates are shown in the accompanying chart. Here the water vapor transmission rate is expressed in grams of moisture per 100 square inches per 24 hours, when subjected to conditions of 100°F. and 95% relative humidity. Overwraps were on cartons of the conventional type. The various materials are identified on the chart, but a more detailed description of the foil materials follows:

1. 0.00035" aluminum foil glue laminated to a paper. This was the first aluminum foil overwrap and it was necessary to seal it to the carton with an adhesive. Such a wrap is commonly known as "Titewrap".
2. Heat-seal coated 0.00035" aluminum foil glue-laminated to paper. This material not only provided greater water vapor transmission protection through heat sealing, but enabled increased production on automatic packaging machines.
3. Reyseal. This is 0.00035" aluminum foil wax laminated to a porous tissue. The wax not only provides increased water vapor protection, but is also heat sealing as it strikes through the tissue. Intermediate papers or films are used to provide greater strength when needed.
4. Super Reyseal. This is heat-seal coated 0.00035" foil which has been extrusion laminated with polyethylene to a grease proof paper and this combination then wax laminated to a porous tissue. With this Reynolds overwrap, heat sealing is accomplished on all surfaces to provide the greatest protection for the most critical products.

To be noted, on the chart, is the significant decrease in water vapor transmission rate from waxed paper to cellophane to the first simple aluminum foil overwrap and finally to Reynolds Super Reyseal (material 4). In addition to superior moisture protection, all these foil overwrap materials also provide low gas permeability, positive light barrier and grease resistance. Further data on these properties will be found in Reports Nos. 2, 3, 4 and 6 of this series.

As stated above, the second objective of overwraps, besides product protection, is identification – which today has graduated into a new science of shelf display and merchandising. This required the development of new techniques in color printing on foil, and again Reynolds pioneered.

Finally, even with perfected materials and highly developed design and printing facilities, this age of automation required ever farther advances in machinery and equipment systems. In this field, too, Reynolds has pioneered. Your Reynolds representative offers expert counsel on this as on other phases of packaging. Call the nearest Reynolds sales office. Or write **Reynolds Metals Company,** Richmond 18, Virginia.

★ ★ ★

Watch Reynolds new TV shows "Walt Disney Presents" & "All Star Golf" every week on ABC-TV.

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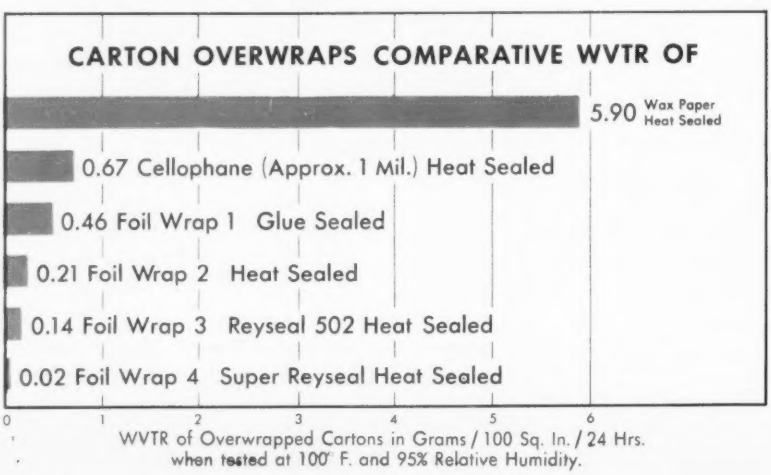

CARTON OVERWRAPS COMPARATIVE WVTR OF
5.90 Wax Paper Heat Sealed
0.67 Cellophane (Approx. 1 Mil.) Heat Sealed
0.46 Foil Wrap 1 Glue Sealed
0.21 Foil Wrap 2 Heat Sealed
0.14 Foil Wrap 3 Reyseal 502 Heat Sealed
0.02 Foil Wrap 4 Super Reyseal Heat Sealed
0
1
2
3
4
5
6
WVTR of Overwrapped Cartons in Grams / 100 Sq. In. / 24 Hrs.
when tested at 100° F. and 95% Relative Humidity.

"Just imagine it," said Brundage: "Ten competitors in the same area—with each truck making but one stop, then passing up the next nine!"

Is Your *Distribution* Keeping Pace?

AS THE WAITERS began serving dessert, the Guff & Gripers looked expectantly toward Ole Sage. He was flanked on each side by a guest.

Good-humoredly, Ole began with a gesture toward the man on his right. "All of you've met C. D. Brundage, and you know he's executive vice-president of one of our large specialty-item bakery chains."

C. D. Brundage took the cue: "Ole tells me you've been discussing modernization. "Well, my company has been through that."

"Then you're the fellow," Batt Bulwark cut in feelingly, "that I want to hear."

"I gather," observed Brundage, "that you've already considered the updating of plant and equipment to increase capacity and to lower production costs. And so Ole has asked me to go on from there and discuss the need to modernize distribution procedure as well."

"And C. D." spoke up Ole, "has a special angle on the meaning of modernization for smaller companies." He turned to the man on his other side, J. J. Talmerage, elderly owner of a minor-size food plant and occasionally a Guff & Griper guest. "For that reason, J. J., I thought you might be particularly interested in sitting in today."

"Thanks, Ole," Talmerage acknowledged. "My business is small, But we've been growing surprisingly recently." Then he added ruefully: "Indeed, we're growing *too* fast for me, since I plan to retire soon. Now, my key men are pushing for a plunge into modernization."

Brundage laughed. "And you're holding 'em off, I suppose."

Talmerage nodded. "Right now, I'm not so sure that holding out against my own people is sound."

"Growth does present problems," Brundage replied sympathetically. "My company is well aware of that —for growth was the impetus behind our own recent modernization."

Batt said skeptically "Your company isn't small. It's a big chain."

"But we were little once," Brundage answered. "We started a good many years ago as one small specialty bakery. We probably weren't the only such bakery at that time putting out these particular items. But we were, however, the first to become a very large chain."

Batt sat up straighter, and demanded: "Are you implying that modernization put you over the top?"

"It helped," Brundage said. "However, I want to emphasize that we went into chain operation out of plain necessity. At the beginning, our distribution costs didn't permit us to go far afield from each plant. And the market capacity for our specialties was quite limited in any one area. But we kept constantly adding to the areas we covered. And eventually our small local operations added up to a chain success."

"I take it the demand for your specialty items increased," Zenith Canning Co.'s Ed Strong put in.

"That's right," Brundage confirmed. "But so did the number of our competitors—some of them single-shop independents, and some units of chains formed off the pattern of our own. Granted, all this business helped create and expand market demand. But it sure played rough with profit margins.

"I recall one of our locations where the situation just got hopeless —almost seemed there were more specialty operators than customers. And prices had dropped so low, every operator in the area must have been losing money. We sure were.

"What made it really dismal was that this situation could easily occur in all our areas."

"But you're still in business," Batt interjected shrewedly. "And if I know anything about it, your 'take' today ain't peanuts. So, how did you do it?"

Brundage went on: "First we modernized our plant facilities to the nth degree to cut costs to bedrock, and we also expanded them so we could meet *maximum* area needs. Then we laid plans for a complete overhaul of our distribution."

"What about your competitors?" Ed Strong asked in a dazed tone. "Did they . . . er . . . just vanish?"

Brundage grinned. "We had to do something about our competitors before we *could* modernize our distribution," he stated. "Let me explain: Bakery products are so perishable that all deliveries are made by truck. Just imagine—if you can—ten different fleets of trucks competing in the same area, with each truck making but one stop, then passing up the next nine.

"Well, we merged with our strongest competitors. We realized that the remaining companies would have to do the same to stay in business. We rightly believed two larger organizations could operate profitably where ten small outfits simply faced going down the drain."

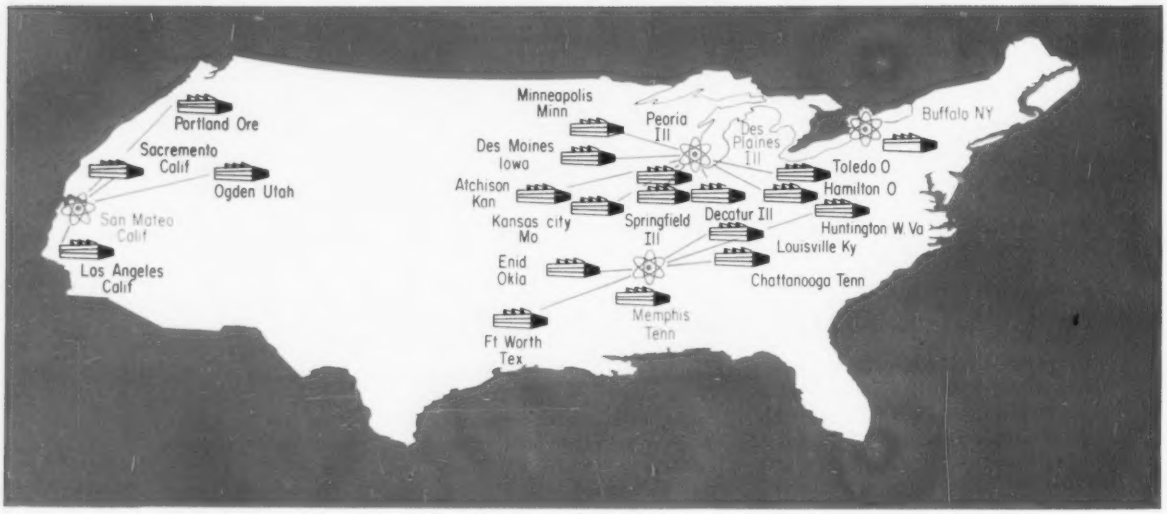
Batt burst out: "But merging—not modernization saved you!"

Brundage insisted: "My point is that the lion's share of our new profits is to be credited to the big savings we made by modernizing our distribution. True, we had to merge before we could go ahead with it."

Talmerage turned to Brundage as the meeting broke up. "You've given me an idea. Likely, we *should* modernize over at our place, and expand as our boys feel is necessary. Then through a merger," he chuckled, "we can unload onto someone else if anything goes awry!" —End

IVAN C. MILLER
"Food Engineering"

National Spread of Action



FOUR SERVICE CENTERS of Pillsbury system are indicated by electronic symbols, while running lines show warehouses they control. Grocery and bakery divisions use centers, but latter have products shipped directly from mills.

There's Built-In '*Stay Ahead*'

Strategic service centers—regional hubs of decentralized warehouse network —keep performance well in front of changing grocery picture . . . Order-processing time cut, deliveries sped, production and sales efforts teamed

HAS YOUR distribution system got the proper gearing for today's rapidly changing grocery-merchandising pattern?

This is a mighty important question, considering the radical effects of these 1959 factors—

More volume done by fewer stores (9% doing about 62% of the business). . . . More and more products vying for shelf space (5,000 in a modern supermarket today vs. 4,700 in '55). . . . Tigher storage and selling space in retail outlets. . . . Demand for more frequent deliveries to keep up with high-velocity turnover. . . . Need for closer meshing of production with orders to curb the inventory drain on capital.

Called for is a flexible system that moves goods to customers faster—and at lower cost.

A major move that targets this goal is Pillsbury's new decentralized setup comprising regional service centers linked with distribution warehouses.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

Under this system, strategically established over the country, trade customers get decidedly better service, enabling them to keep pace with the faster turnovers, easing the pressure of reduced storage facilities, and curtailing out-of-stocks.

Announcing the new facilities, Pillsbury's distribution director for grocery products, W. H. Gribble, states: "The four service centers—Buffalo, Memphis, San Mateo, and Des Plaines (see map)—are regional hubs of the new system. They control all grocery products distributed from the warehouses, with the objective of fastest order processing and product delivery possible at the lowest cost."

The network passed its first critical test with flying colors recently when Pillsbury introduced 11 new items in one swoop. Store saturation on a national scale was chalked up so swiftly that company officials are convinced that the system will fully live up to its promised efficiencies.

Chalking Up the Benefits

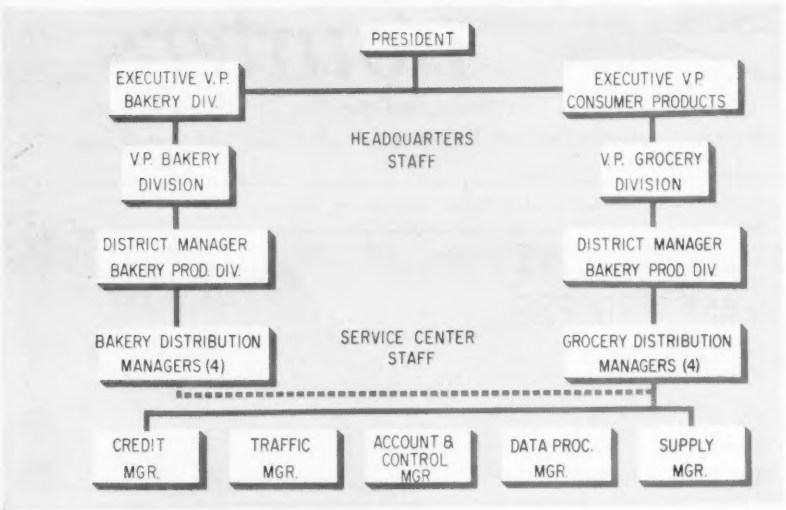
The new efficiencies are several and far-reaching:

▶ **Curbing of out-of-stocks at store level.** Just how serious this problem still is for manufacturers is emphasized by an A. C. Nielsen check showing 21% of 220 major brands missing from the shelves in 6% or more of the stores normally handling them.

Pillsbury hopes to end this drain on profits through its shrewd spotting of plants and warehouses that stock all grocery items. Thus, a customer's order—no matter how varied —can be shipped complete.

Example: The first box car shipped out of Chattanooga ware-

Who, What, and Lines of Authority



DISTRIBUTION MANAGERS (grocery and bakery) at each service center report through district managers to their respective headquarters vice-presidents. Channel of authority then goes through executive v.-p. to president.

Decentralizing For Better Decisions

"Our new move", says President Paul S. Gerot, "will make speedy changes in the responsibility and authority of many people in all areas of our company. Its purpose is to give more people in the field–and in headquarters–full power to make decisions based on facts and conditions near scenes of action.

"Reason is that those close to a situation are in the best position to take swift, accurate action.

"Also–and very important–is the fact that when a firm grows as large and complex as ours, it's more efficient to divide the decision-making power among more people. I expect this decentralization will result in better decisions and, therefore, greater earnings."

In Pillsbury's New Distribution

house carried a carload assortment of 46 different grocery items.

▶ **Drastically cutting in-transit shipping time.** Ultimate aim is to have all goods on their way within 24 hr. after order reaches the center.

▶ **Reducing number of warehouses** through a key planning of these facilities in relation to major population centers.

▶ **Providing better inventory control,** through speedier, more accurate running of data by electronic office equipment. Already, inventories on some items are turned over every two days (as at Peoria, Ill., warehouse).

Here, there are challenging opportunities for office and administration people to solve the special distribution problems.

▶ **Streamlining plant operations.** Products are whisked directly off production lines for straight (instead of mixed) carload shipment to distribution warehouses. The 1-item carloads are stored until the goods can be made up into mixed carloads (as many as 50 different items).

▶ **Leveling peaks and valleys of production and employment.** The distribution warehouses are more attuned to fluctuating shipping demands.

Each center in the Pillsbury network is a joint grocery-bakery office handling, through electronic data processing, accounts, credit, traffic, and supply for both product lines. Des Plaines, for example, processes orders from 15 states and absorbs the huge volume of paperwork previously done by hand in a dozen sales offices.

To meet the demand for high-speed, low-cost paper handling, the centers use batteries of IBM electronic office machines operated by specialists. These units process orders, which are then directly teletyped to plants and warehouses.

While the centers operate jointly, the specific grocery and bakery products divisions handle their own individually different problems and opportunities. Accordingly, each has embarked on a different technique for moving goods.

How It's Done

Bakery orders, processed from centers, are teletyped to plants that ship the supplies and goods directly to bakeries and the institutional trade (because bakery flours, generally milled to customer "specs," are not kept on hand). Helping out here are some 70 local warehouses. Other bakery products shipped include prepared mixes (50- and 100-lb. lots) for bakeries, and mixes (5-lb. sacks) for institutions.

It's noteworthy that the linking of operations of the bakery products group not only provides bakeries throughout the country with better service, but Pillsbury plants are also able to schedule production more efficiently. Through tighter planning of operations, there are longer mill runs on specific flours, assuring more uniform quality products.

Center Closeup

Now let's see how a typical center –Des Plaines, Ill.–is geared to the new distribution network. This one also serves as sales headquarters for grocery, bakery, and refrigerated products for a metropolitan area.

Sharing top responsibility are a grocery distribution manager, William Edgley, and a bakery distribution manager, Neil Alden. Edgley is the service center's supervisor, and Alden, in effect, 'buys' such services from the center as order handling, issuing of invoices, and collections.

Directly responsible to the supervisor (grocery distribution manager)

For free reprint of this article, write G-2 on Reader Service Card, back of issue

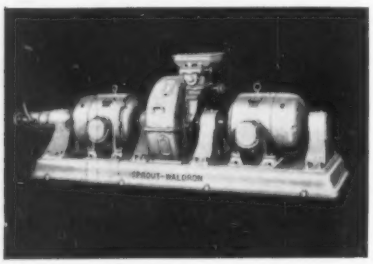
SPROUT-WALDRON Pointers

for Mixing and Blending • Size Reduction
Size Classification • Bulk Materials Handling • Pelleting and Densifying

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Penna.

PACKAGE ASSEMBLY FOR RECLAIMING LEATHER SCRAP HAS MANY OTHER USES

A complete package assembly originally developed for defiberizing leather scrap has been adapted to the reclaiming of other waste materials. The Sprout-Waldron package consists of a rotary knife cutter, a single disc defiberizing mill, a double disc attrition mill, two beaters for separating the nibs, and the necessary products collecting system for handling the end product.



Typical Sprout-Waldron double runner attrition mill used in leather scrap reclaiming system.

Feature of the system is the use of two attrition mills. The precut leather scrap is partially opened by the spiketooth action of the single disc mill. It is then rubbed out into a smooth fiber by the fine style T plates of the double disc mill.

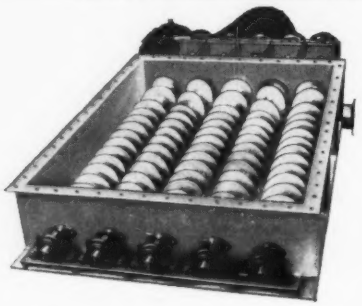
Sprout-Waldron attrition mills have been Adaptioneered® for a variety of purposes. These include such things as the recovery of cord and rubber from scrap tires, the production of fine wood flour, the powdering of mica, the pulverizing of cocoanut and other nut shells, the shredding of rags, granulating of plastics and dozens of other uses. Bulletins 133 and 143 give the facts.

LIVE BOTTOM BINS INCREASE PROCESS EFFICIENCY

Greater production, a more uniform product and smooth process flow have been achieved at Corn Products Refining Company through the use of S-W live bottom bins. Previous to the installation of these bins there were extensive variations in the rate of feed fed to the dryers.

The bins are designed so that the corn fiber contacting the rotating screws at the bottom keeps flowing in a uniform stream regardless of the level in the bin. This changes a batch operation into a continuous process.

Three bins are used. The large one handles coarse corn fiber at 21 lbs. per cu. ft. It has a capacity of 1400 cu. ft. and is designed to deliver from 12,000 to 48,000 lbs. per hour. The second bin, used for fine fiber which weighs 25 lbs. per cu. ft., has a capacity of 400 cu. ft. and will deliver from 7,000 to 28,000 lbs. per hour. Bins for gluten have a capacity of 200 cu. ft. and are designed to deliver between 10,000 and 40,000 lbs. per hour. Since the installation of Sprout-Waldron live bottom bins the variations in filter press output which previously caused dips and surges in the process stream no longer affect the feed to the dryers. The result—increased process efficiency and lower production cost.



Typical base section of large S-W live Bottom Bin, with five parallel screws, designed to assure uniform feeding of many different granular, fibrous and powdered materials.

SW

Glue Manufacturer Cuts Mixing Time From 3 Hours to 15 Minutes

The use of an Adaptioneered® S-W Vertical Batch Mixer not only reduced mixing time from 3 hours to 15 minutes, but cut mixing and packaging costs in half and saved 125 feet of floor space while achieving perfect batch uniformity in blending ground dry glue.

For any reasonably free-flowing type of material, this mixer offers tremendous advantages. In this installation, the 300 cubic foot mixer requires only 50 square feet of floor space although its capacity is equal to 12,500 pounds per batch. Power requirements are 20 HP, and the mixer is completely self-cleaning and dust tight.

Get the full-story on Vertical Mixing by reading Bulletin 192. Copies on request.

CP/107

are five department managers, who head up these functions: Accounting and control, credit, data processing, supply, and traffic.

Here's a quick run-down on how orders are processed:

Salesmen are furnished special order envelopes for first-class or air-mail delivery. At the service centers, order envelopes are extracted and passed on to the credit manager for approval.

Orders are then relayed to traffic manager, who routes the cars. The supply manager then takes over, editing and scheduling the orders.

Data processing now steps in. Orders are key-punched on cards that go to tabulating machines. At this point, data of punched order cards are printed into shipping orders by accounting machines, or data are transferred to tape. In latter case, tape data is teletyped to distribution warehouses, from which orders are prepared for shipment.

Warehouses then teletype the center relative to car number and when car was shipped. The center, in turn, extracts the order cards and uses them for invoicing—charging to accounts receivable and crediting inventory.

Data processing equipment consists of three IBM card punching units, two accompanying verifiers, two sorters, and two accounting machines. In addition, there are such auxiliary units as interpreter, collator, reproducer, and calculator.

At the start, orders are pigeonholed into the tabulating work bins. These bins are identified for 9:30-A.M. billing and 11:00-A.M. processing into four types of orders—print, punch, print-punch, and invoices.

Next step is to process these orders onto cards by punch-card machines and then run the cards through the verifying units. Cards punched for each order, at this point, are the three-heading type (customer name and address, routing, and miscellaneous information like terms and delivery point), and the detail type (specification of products).

Now cards are segregated by the sorting machine, with detail cards balanced and matched, in the collator, with a master deck of prices. These cards then proceed through the calculating machine that extends and punches quantities and prices.

They're then machine-sorted back with header cards and are now ready, as stated, for printing (on accounting machine) or tape-punching (for teletyping) orders. —*End*

FE Poll Finds There's Definite Favor For 'Canned Foods Month'

Repeating of last Fall's promotion is backed by most packers checked—though need is seen for changes

DID THAT highly publicized "September Is Canned Foods Month" promotion sow seeds that will sprout future sales? Or did it just fall flat?

Right now, this is the industry's favorite hot-stove topic.

About $6 million worth of merchandising was anteed up for this cooperative SICFM drive. It was the kind of public relations powerhouse that canners have looked for in recent years to: (1) Ward off the inroads made by frozen foods, and (2) recapture some of the glamor that's surrounded the latest quick-fix specialties.

And so, most processors checked by FE feel that, while the campaign didn't trigger any sales boosts in September, it is worth a second try.

However, one leading national-brand outfit hopes the venture "will be activated under National Canners Assn. sponsorship on a year-'round basis, with peaks of activity during limited periods in the Fall, Winter, and Spring."

Libby's J. W. Rose, marketing v.-p., agrees that "three promotions (Sept.-Oct., Jan.-Feb., Apr.-May) would increase sales far greater than only one promotion per year."

FE's check of industry opinion reveals these two drawbacks to last Fall's effort:

1) Bad timing. "Scheduling the push for September," says F. J. Miller, v.-p. of Curtice Bros., "meant shipments had to be made early in August when the fresh vegetables season was still in full force." And Henry Townsend, canned foods manager, North Pacific Canners & Packers, says it came "at the peak of our canning season."

Others observe that the campaign conflicted with the distributors' own "back-to-school" drives, and ran too close to the annual big-ticket October "kick-offs" ofbrand leaders.

2) Weak wholesaler and retailer support. The SICFM committee, in its final report, notes that insufficient display material slowed up retailer tie-ins. Practically every canner contacted by FE says that trade backing was wanting.

One Midwest canner comments bitterly: "Retail distributors today appear to be looking more for allowances than they do for ideas. They are displaying items on the consideration of someone contributing to them financially—rather than items which will appeal to the consumer because of wide publicity."

As to whether the $6 million venture paid off, canners are sharply divided.

"We moved a lot of merchandise," North Pacific reports.

At the other end of the spectrum, Illinois Canning's Vice-President Keith Vines calls it "a total flop." He adds: "We see no reason to consider its being repeated." And firms, such as Stokely-Van Camp, say that their participation "was rather limited because of the obvious lack of appeal of this particular theme."

A Green Giant spokesman doubts "that a promotion as broad as this gives good dollar value. The same dollars, spent more specifically by individual companies, will produce far better total results."

All in all, though, a majority of firms, including the critical ones, believes the campaign is worth a repeat.

Ad Director Everett M. Runyon, California Packing, argues for a long-range view of the program's effectiveness. "The results of this educational publicity will be felt for months to come," he insists.

A similar tack is taken by John G. Tobias, Dole's assistant general manager. Says he: "We're sympathetic toward continuing the annual promotion, although it is principally a public relations operation in which canned foods' advantages are consistently set forth.

"Since this was the initial year on a canned-foods-month promotion, the novelty may not have carried much impact. However, if continued annually, it may have snowballing results as time goes by."

And Robert Arneson, North Pacific's sales agent, realistically sums up: "If canners aren't interested in programs of this sort, who is going to do the pushing?" —*FE Staff*

arctic or tropic

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The complete Powell line includes all types of valves in bronze, iron, steel and corrosion resistant metals and alloys, for pressures from 125 to more than 2500 pounds W.P. Consult your local distributor (there's one in most major cities) or write to:

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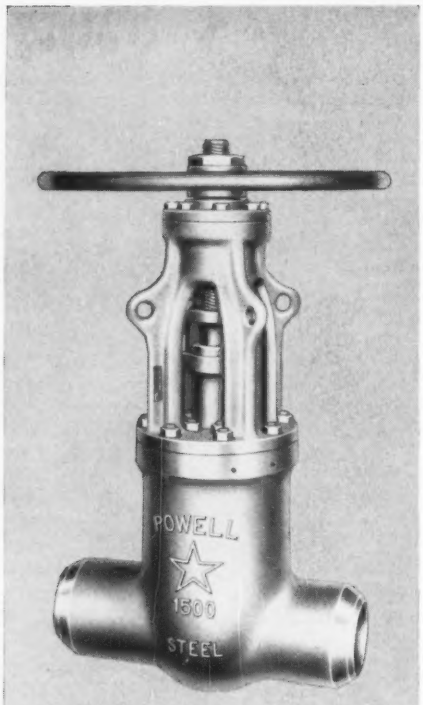


Fig. 11303 W. E.: Steel O. S. & Y. pressure seal gate valve for 1500 pounds W. P. at high temperatures. Powell pressure seal valves are available for working pressures from 600 through 2500 pounds.

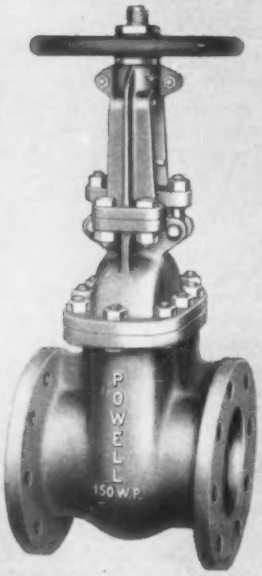


Fig. 86190: Steel union bonnet globe valve for 400 W.O.G. Designed for liquified petroleum gas service.

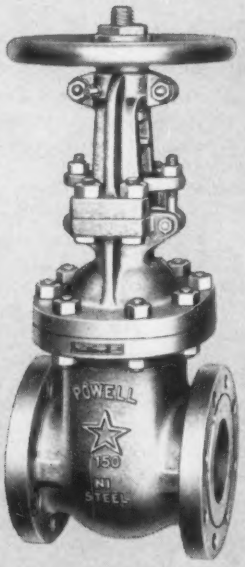


Fig. 2453G: Large 150 pound stainless steel O. S. & Y. gate valve for low temperature service. Can be furnished with interchangeable solid or double wedge disc.

Fig. 1503 Mod.: 3½% Nickel-steel O. S. & Y. gate valve for low temperature service.

POWELL...world's largest family of valves

CASE HISTORY OF MONTH

From files of *National Consumer Panel Division of Market Research Corp. of America.* Material is factually correct. Identities of product and companies have been masked to insure anonymity.—The Editors

Bigger Sales—by Drawing Bead

Management's problem

SEVERAL YEARS AGO, our small company introduced a new and different grocery product. It was an immediate success, and our sales increased rapidly. Until recently, we had the field to ourselves. Now, however, a number of similar products have come out.

Our volume is still rising, because the market continues to expand. But our brand share, naturally, has started to slip. How should we go about protecting ourselves against this new and vigorous competition?

What Would You Do?

Management's decision

We had to find out, first, where the competition was making the heaviest inroads. For this purpose, purchase records of National Consumer Panel families were analyzed.

Our customers were compared with buyers of all other brands in terms of income, place of residence, presence of children, and other family characteristics. The objective was to locate trouble spots so that effective counteraction could be taken. One of the breakdowns pinpointed the age of the housewife—and that's where our weakness was uncovered.

Researchers had separated consumers into various age groups. Then they determined the percent of sales going to each age segment, and the percent of our sales accounted for by each group.

This showed us two things: (1) Which age groups were responsible for the most sales, and (2) our relative strength in each segment.

The very worthwhile analysis disclosed that about 40% of total market volume was concentrated in just two of the age classifications. However, these two important groups accounted for much less than 40% of our volume.

Conversely, our brand was very strong in the remaining age sectors. It was obvious, then, that competition had gained its best foothold in the most fertile sales area.

Result of action

Being exactly the kind of information we were looking for, these data pinpointed our weakness and gave us a well-defined "target" for our advertising. Putting added promotional emphasis on the two age groups in question was clearly indicated—not only to meet competition, but because volume levels there were so big that a 1-point increase in market share would be equivalent to a 5-point gain in any of the remaining groups.

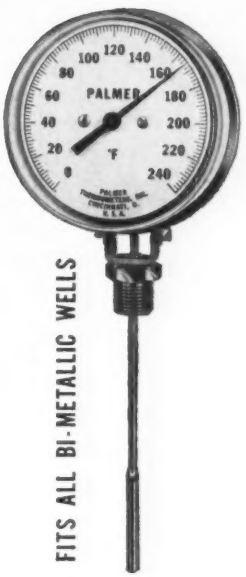
The technique of comparing our sales volume in various age groups with the relative importance of these groups in the total market was subsequently adopted on a continuing basis. It is now used to measure how well specific marketing campaigns accomplish their objectives.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y. Your inquiry will be directed to source of case-history item.

Outstanding Accuracy

PALMER

Dial Thermometer



Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
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PALMER

THERMOMETERS, INC.

Mfrs. of Industrial Laboratory, Recording and Dial Thermometers

2515 Norwood Ave., Cincinnati 12, O.

Circle 276 on Reader Service Card

NEW MSG SOURCE

1. Merck is your new basic source of supply for MSG. Recently completed Merck production facilities with multimillion pound MSG capacity can satisfy even the healthiest appetite for this important flavor-enhancing ingredient.

2. You can depend on Merck for unlimited quantities of MSG because the unique and technically advanced fermentation process utilizes raw materials which are available in unlimited supply. No other Merck product or process competes for this supply.

3. Like all Merck food processing ingredients, the quality of Merck MSG is unsurpassed. It meets the highest quality-control standards for monosodium glutamate 99+% pure.

4. Merck MSG is available in two forms—Crystals and Fine Crystals—to fit your requirements. It is packaged in 100-lb., 50-lb., and 10-lb. containers.

5. Merck MSG deliveries are fast, since distribution centers are strategically located from coast to coast.

6. The Merck Food Research and Technical Laboratories are fully staffed and ready to serve you. Technical assistance, including MSG assay service, is available on request.

7. Ask your Merck representative for complete information about Merck MSG or write directly to:

MERCK & CO., INC.
RAHWAY, NEW JERSEY

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MARKETING SIGNALS

Road Jam for New Products?

Two new retailing trends may put a crimp in food manufacturers' new product plans.

They are: (1) Fast rise of bantam supers, whose smaller shelf space allows fewer brands; and (2) downturn in sales of new stores, which may pinch operators' expansion plans. Super Market Institute reports that weekly sales of supers opened in '58 averaged 9% below volume of new units opened in '57.

These factors, plus the high costs of product introduction, call for deep-digging research that will assure consumer acceptance, says Borden's President H. W. Comfort. In a statement to FE, he urges that new product ideas "be thoroughly screened before they enter the lab stages," that more use be made of consumer sampling, and that major items be tested for months in selected markets before being offered nationally.

Bigger Role for Brokers

With fast moving local conditions often leaving a manufacturers' national sales policy out of date, brokers are being relied on more and more to carry the ball in their own market for food firms. A new poll by Grocery Manufacturers of America finds that 50% of the respondent processors increased their use of brokers in recent years and 29% intend to use them more in the next few years.

Asked to point out where brokers can best improve their service, G. M. Aers suggested better planning of sales efforts, systematic coverage of all important accounts, increased use of point-of-sale merchandising, and more "idea" selling.

Profiling a $19 Billion Customer

Last year saw two significant contributions to better knowledge of consumer food buying habits–"Life" magazine's consumer expenditure study, and Market Research Corp. of America's family menu project. Now, Standard Brands is doing the same kind of spadework on the $19 billion institutional market.

Preliminary findings of SB's study–carried out last May–indicate that families who eat out four or more times a month comprise 13% of all families. But they account for 52% of all away-from-home meals and 41% of all money spent in public eating places.

The poll also disclosed that 44% of all families fall short of eating one main meal away from home during the month. While the recession may have had some influence here, it's indicated that what's needed are more joint promotions by food manufacturers and institutional operators themed to the eating-out idea.

Aerosols' Mixed Blessings

Expected popularization of food pressure-packs will bring more regulation on federal and state levels, with corresponding need for standardization. So predicts Aerosol Techniques, Bridgeport, Conn., custom packer.

Other developments forecast by AT for aerosols this year: Doubling of line speeds from 150 to 300/min.; more super-market distribution, pushing prices down; reversal of the trend to small filling companies; greater emphasis on brand identity and color; and decreased costs brought about by improvements in containers and valves.

Words on Package Rate Extra Care

Copy that goes on a package design should be chosen as carefully as that which ends up in an advertisement –because their audience is a big one. So reasons Continental Can's Stephen M. Barker.

As he explained at the recent United Fruit Food Forum, the square inches of a typical carton and a full-page magazine ad are the same. A package that's distributed in 75% of the stores in the country can be seen by 50 million families making 130 grocery store trips a year. That adds up to 4.8 billion exposures a year.

BRIEFS

In bid to increase milk consumption among adults, American Can will push campaign stressing aging problems that stem from calcium deficiency. Canco carton top premiums are being offered to encourage housewife interest.

More space for frozens: Super Market Institute reports that new stores opened in '58 allocated 80 ft. of display area for frozen foods (vs. 72 ft. in '57), and 20 ft. for frozen meats (compared to 18 ft. the year before).

Retailer-owned distributors may account for 40% of total food store sales by '65, forecasts Ray O. Harb, executive v.-p., Cooperative Food Distributors of America.

Direct-to-consumer sales pay off for Mayacamas Vineyards, Napa, Calif. Firm, which bypasses retail channels, doubled sales during first half of '58.

Record-breaking peanut crop of more than one million tons will spur peanut product makers to spend more than $10 million on advertising this year, National Peanut Council estimates.

Sizable 44% of supermarket shoppers will accept substitute brand if their favorite brand is out of stock, according to survey by "Burgoyne Grocery & Drug Index," Cincinnati. One-fourth say they'd go to another store, and 31% will wait for items to come in stock.

Shifting target for your ad dollars: Census Bureau reports that within past year 20% of population changed residence, with one-third of these setting up house in a different county.

PACKAGING

How to Insure Top Performance

Trick is to tailor the new equipment into your plant and to pre-key installation test runs to avoid downtime losses . . . Here's an expert's practical step-by-step program

NO. 1 IN GETTING the most from your new packaging unit is advanced planning—the kind of planning that guides you each step of the way from the machine-selection stage to the "on stream" phase.

With this kind of scheduling, the new unit will be working for you at full clip within hours after installation.

Production efficiency will be promoted by "fitting the machine and operator to one another." And costs will be saved by minimizing the downtime of your other operations during hookup and testing.

Here's a step-by-step program for bringing you optimum operating dividends:

In the machine-selection stage, see if a new unit will combine two or more present operations. This may simplify your processing operation as well as insure increased capacity for future growth.

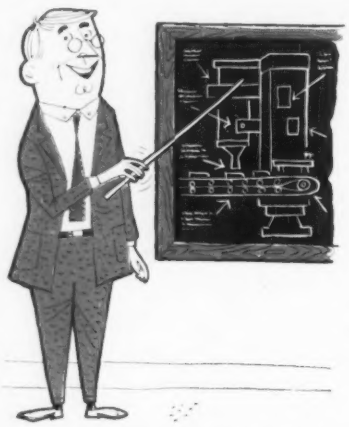
Prior to making your choice from several "candidate" units, go over your needs carefully with the representatives of the various makers and, if necessary, ask for engineering assistance from potential suppliers. Then select the simplest, most easily maintained machine, one capable of handling all tolerance limitations specified for the work it must do, and one with sufficient capacity to work without strain.

Provisions for size change, if required, will be subject to speed-versus-flexibility. Generally, the higher the speed the narrower the size-change limitations.

Under every circumstance, the size-change parts—whether they be quick-change ones that remain part of the machine or types that have to be replaced—must be rugged and precise.

Your machine-check should make sure that—

1. Basic safety and control devices (electrical and mechanical) are integral parts of the unit. If they connect to other lines, or non-integral sources, be sure that junctions can be made easily. And keep the requirements of the local safety codes in mind.



Make sure operator is familiar with machine's functioning.

2. Mechanisms that have to do with the product feed or discharge—such as chutes, hoppers, indexers, transfer units—are soundly engineered and applied.

3. Lubrication points are accessible. Where lube points will be hidden by subsequent installation, mount leads to them to bring them into the open. Better still, find out where automatic lubrication will do the job.

4. Adjustment areas are easy to reach. This is especially critical where in-motion changes may have to be provided for fine synchronization.

5. Power transfer members are strong enough to resist back-lash problems if the packager is to drive —or be driven by—another unit.

Choosing the right location for the machine will save you costly headaches later on.

First of all, the machine should be placed where it can be readily serviced with replacement parts. Make sure that maintenance crews can get at it easily for lubrication and clean-up work.

The new packaging unit must be easily connected to companion equipment performing related functions in the overall operation. This can be a critical point if you're aiming for an "automated" line, where individual units take from, and feed to, one another in continuous sequence.

To avoid "over-rides," which might cause jam-ups and "starving" of subsequent machines allow plenty of room for limit controls that relate to high/low start and stop switches, feed and discharge conveyors, magazines, and hoppers.

Be sure the machine foundation is a solid one, and of proper height.

Keeping Rein on Downtime

Careful planning of the new installation will minimize production downtime in your other operations during the hookup and testing phase. It may be necessary to provide temporary by-passes for the machine so that the installation and shakedown run won't interfere with other operations in the plant.

It's wise to have the manufacturer's technician on hand at this period—to give instructions on supervision, minor adjustments, preventive maintenance, change-overs, testing, and operation of the unit. Some machine makers supply this service at no extra charge, others have hourly, daily, or weekly fees (with and with-

Set up standards so operator will have a performance guide

LOUIS S. FRANTZ

Canning & Packaging Consultant, Jenkintown, Pa.

Of Your New Packaging Machine

Place all controls within easy reach for speedy use.

cut expenses). Arrange the most convenient time and place where your personnel can receive the advice.

Once operators have received their training, set up standards which can be referred to as a guide later on. That way, personnel will have a concrete indication of what is expected of them and of the machine, and will have a better idea as to when preventive maintenance should start—to avert subsequent high expense and complications.

When the machine is being set up, be sure that level heights are properly aligned, that feed and discharge conveyors are precisely hooked up, and that supply chutes have their proper controls.

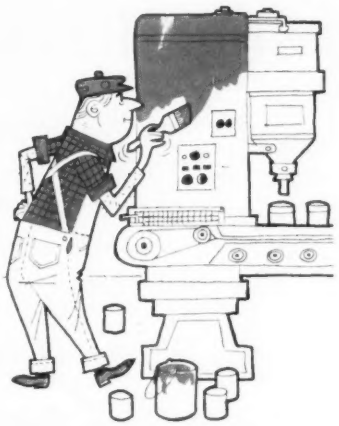
Once the new package unit is in place, it's a good idea to paint the work surfaces, and other areas that will come in for special attention, with eye-catching colors. This makes it easier to spot important parts. And if the unit has been supplied to you in a drab finish—which is not infrequent—touch up the remaining surface area with a restful color.

An important (but often overlooked) first step in getting maximum output from a new machine is to tell your employees—especially those who will work the unit—why it is being installed. Spell out for them how, by enabling the company to package better and more economically, it will improve the firm's competitive position and help to increase sales—meaning more job security.

People who operate and maintain a new machine without fully understanding its use and importance may tend to criticize it. If the new unit has an unfamiliar—or very special—construction, it is worth the time and money to have your key plant personnel assist with the final assembly and testing at the manufacturer's own plant.

Cost-wise, it's far cheaper for them to learn these things in the manufacturer's plant than in your own (where a tie-up would add to production costs).

That way, operators will get a better working knowledge of the packager, its operating principles, the



Paint important surface areas a bright color to aid fast recognition.

organization behind it, and what has to be done to keep it functioning should an emergency condition ever arise. At the same time, they'll learn what to expect in the way of help, parts service, and additional engineering.

Naturally, the manufacturer should be asked to supply descriptive literature—the kind that can be read and understood by the average layman. Maintenance and parts should be well covered. And good photos can be very helpful. Visual aids are excellent for operating personnel when a machine has to be dismantled and reassembled.

A few other steps can be taken which will help output by "fitting the machine comfortably to the operator." Controls, for example, should be within easy reach. Platforms or steps can be placed where needed, and supplies can be spotted nearby.

If mirrors, alarm systems, stop switches, and other controls and inspection devices are needed, be sure they are placed for ready use. If they are conveniently at hand, there's a much better chance that they will do the job for which they're intended.

When readying the machine for test runs, make certain that feed and discharge conveyors have escape gates (to eliminate jams and over-feeding) along with adequate accumulating tables, boxes, or drums. Product supply lines and chutes should have good drain or discharge openings, along with sterile receptacles for product accumulation and reprocessing.

To get a fair idea of what adjustments may be necessary, test the machine with your regular-production materials—including container and adhesive. Then synchronize line component speeds carefully.

There's no flat rule on how long a new machine should be tested. Shakedown period will hinge on desired packaging speeds, the number and type of products the machine will handle, and your operating personnel's familiarity with the unit's functioning characteristics.

As a final step, be sure that your quality control department is satisfied with the results of test runs. That way, you'll avoid having to make costly changes later when the line is "on stream." —*End*

Get maker's maintenance and parts manuals—and follow them.

RETAILER LABELS invade new fields as 27 member chains of Topco group break out with own brand of frozen prepared foods. Besides four new items shown here, line includes three pot pies and chicken a la king. More recipe ideas are now in the development stage.

Prestige Packaging Sparks

Hard-driving Topco selects class-appeal design to spearhead chain-label expansion into frozen specialty field . . . Move gives regional retail group merchandising boost, offers smaller packers new outlet, poses new challenge for advertised lines

HIGH-STYLE PACKAGING that suggests the pleasures of eating-out right in the home is sparking one of the newest trends on the retail front—private labels on fast-climbing "heat-'n-eats."

Up to now, retail groups have hung their own brands mainly on the fast-turnover items whose mass demand has already been built up by national merchandisers. But now a Midwest distributor, in a bold marketing move, is expanding the private label to the newer specialty products whose biggest growth still lies in the future.

Triggering this latest competitive effort is Topco Associates, Chicago, distributor of exclusive brand products to 29 supermarket chains (see FE July '58, p.52). The challenge: A "prestige" line of prepared frozen foods, labeled "Dining In," backed by high-class package designs that pack a strong competitive punch.

Involved in Topco's move is the introduction of four new items—7-oz. potatoes au gratin, 7-oz. macaroni and beef with tomato sauce, 7-oz. stuffed green peppers with tomato sauce, and 16-oz. sliced turkey for two.

Also included is the shift of four fast-moving specialties—three single-crust 8-oz. pot pies (beef, chicken, and turkey), and 12-oz. chicken a la king—from Topco's "Top Frost" frozen food line to the new Dining In family.

Topco's principal objective is to ride upward with the growing popularity of these convenience-type items. Explains Robert D. Fenn, assistant general manager:

"These frozen 'heat-eat' products offer excellent growth potential. True, they are a decade or so behind the established frozen foods in growth, development, and acceptance. But similar gains may be expected with the newer frozen recipe-type products, despite the need to surmount such complications as product formulation, portions, standardization of carton sizes, and selection of packaging materials."

The "Dining In" name is a reverse-twist on the expression "Dining Out".

Topco thus brings to its supermarket chains a new line of private-label items that is seen adding to the personality of the stores. And by giving the prepareds a different family name from Top Frost, it shrewdly promotes special product identity.

Class-appeal packaging, which reflects greater interest by chain groups in the pulling power of the package, puts member retailers—collectively and independently—in a stronger position to compete with national brand frozen specialties, without necessarily replacing them.

Pot pies, macaroni-and-beef entree, and potatoes au gratin are in aluminum foil containers packed in "Glamakote" high-gloss cartons

Creating The Package

NEW PRODUCTS underwent repeated formula changes and taste-testing with competitive items constantly compared. Seen checking stuffed peppers are (l to r.): Ed Sweeney, product mgr.; Dick Zirbel, technologist; Bob Fenn, asst. gen. mgr.

EASY-TO-READ menu suggestions are printed on back panel, along with stylized color pictures of table setting.

Private-Label Push

(Marathon). Other items appear in cartons having "Super Glosseal" wax wrap (Crown-Zellerbach). The turkey entree comprises meat slices, gravy, and seasoned bread dressing in boilable Mylar bags.

Printed carton and overwrap design (Morton Goldshall, Inc., Chicago) features white snowflake and candlestick motifs, hyacinth blue background, and cerise accents Mouth-watering pictures showing products' inmeal use also appear on front panel of packages.

Basic design, according to Topco's packaging manager, Bob Andrews, contrasts warmth of product with a cool-colored background. Hyacinth and cerise were selected as a high-style color combination. Snowflake and candlestick motifs convey frozen product and dining-in impressions.

One significant effect following from Topco's latest move is that medium and small packers are thus offered another product outlet (in addition to their own label business). Accordingly, they can compete more efficiently with larger operators.

This cooperative venture also is seen aiding smaller packers in product and package development as well as quality control. What's more, they'll be in a better position to keep modernizing.

Currently, Topco is supplied by six packers. It plans to include more. The suppliers, strategically spotted around the country, are product specialists (poultry, meats, etc.). Some pack several items.

The product development section, under John Thuermer, is investigating an additional dozen items for the future. Even foreign dishes are getting the eagle-eye.

How It Started

Development work on the new line began two years ago after particular note had been taken of the potential for frozen specialties. Says Fenn: "We'd been distributing about 70 of the well-established frozen fruits, juices, vegetables, poultry, and seafoods, as well as the flashy performers—fish sticks, French fries, and pot pies—under the Top Frost label.

"Our thought was to put the 'ready-to-eats' under a family private label. And since nobody in our organization scoffed at the idea of including the fast-catching-on frozen entrees under the new Dining In brand, we went ahead on a program of product developing, packaging, and market testing."

The Dining In label plan was put before the member retailers' new products committee at a regular meeting. These key executives gave it the green light—and the new line of products was on its way.

Frozen stuffed peppers and sliced turkey were market-tested under the firm's previous Dartmouth label to determine consumer reaction. Results were so successful that Topco put new label on the items.

At the same time, store members reported on selling activity of similar products of different brands, and Topco made its own store checks.

While market testing was going on, product development staffers worked with ingredient suppliers and packers on two more items—the macaroni-and-beef entree and the potatoes au gratin.

Meanwhile, the packaging department was at work with its designer. Over a 1½-yr. period, some 40 designs were evaluated.

Finally, there came the kick-off at the recent annual meeting of members attended by sales, merchandising, and buying executives. Slides illustrating the eight new packaged products were projected on a prominent screen.

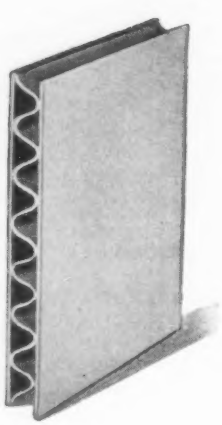
Product Manager Ed Sweeney reports: "Members welcomed the Dining Ins, predicting that the eye-appealing packages would go far in influencing consumer buying habits. Initial orders were more than expected."

Quality control has been emphasized throughout. It's maintained by: (1) Supervision of plant production periodically by Topco field inspectors and QC representatives, (2) setting up a QC staff within producing plants, and (3) submitting samples—competitive ones, too—for evaluation at headquarters.

—FE Staff

What you should know about

Why do they put "permanent waves"



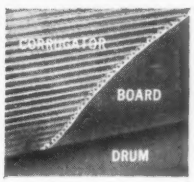
"flutes" in Union Boxes

in corrugated boxes?

The small "waves," or flutes, in the center section of corrugated board are a vital box construction feature. Like bridge trusses, they absorb and distribute shock — provide extra rigidity for the walls of your shipping container.

Flutes are like bridge trusses

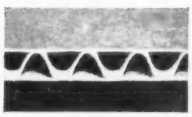
All flutes, as the illustrations show, are not alike. No one is "best." Each does a specific job. Selecting the type you should be using calls for a detailed analysis of your product. This is one small part of Union's complete package engineering service. These fundamentals, however, are excellent guideposts:



The corrugator forms the flutes

An "A" for cushioning

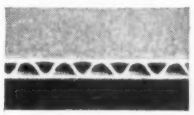
"A" flutes were the first type used in corrugated box manufacture. They have the highest arches—about 3/16 inch. "A" flutes are generally used for fragile articles because their greater height offers extra cushioning protection and better stacking strength.



"A" flutes

"B" flutes–smallest and stiffest

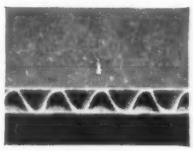
"B" flutes are lower, stiffer than "A," have 42 per cent more flutes per foot. Because of reduced thickness, "B" flute board makes a neater package, takes up less warehouse and car space. Excellent for heavy items like canned goods which support their own weight, thus require less shock resistance.



"B" flutes

"C"—the in-between flute

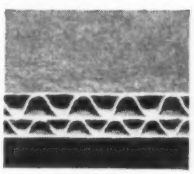
Half-way and happy medium between "A" and "B" are "C" flutes, probably the most commonly used today. They combine the best features of the other two and are often an excellent compromise.



"C" flutes

Combinations may be needed

Flutes may also be combined, one on top of the other, to form a double wall container. The combinations most generally used are "A"-"B" and "C"-"B." The double walls provide greater protection and cushioning, and are ideal for heavy duty containers.



"C"-"B" flutes

Union Box engineers are always ready to help you determine the proper flute, or combination. You'll find, too, that the flutes in Union Boxes are consistently well formed—each of uniform height—each taking its full share of the load.

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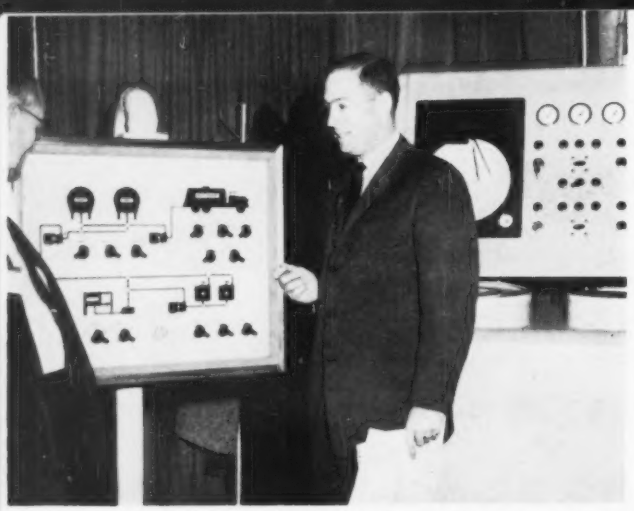
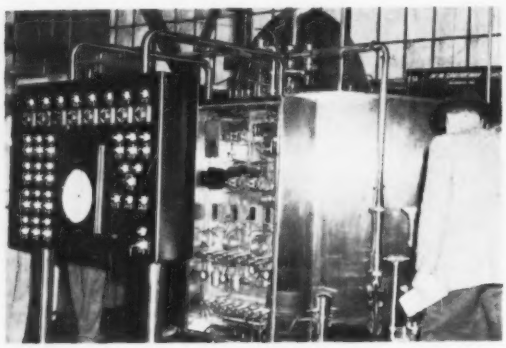
Automation, non-stop processing, and packaging feature equipment displayed at bi-annual dairy exposition in Chicago



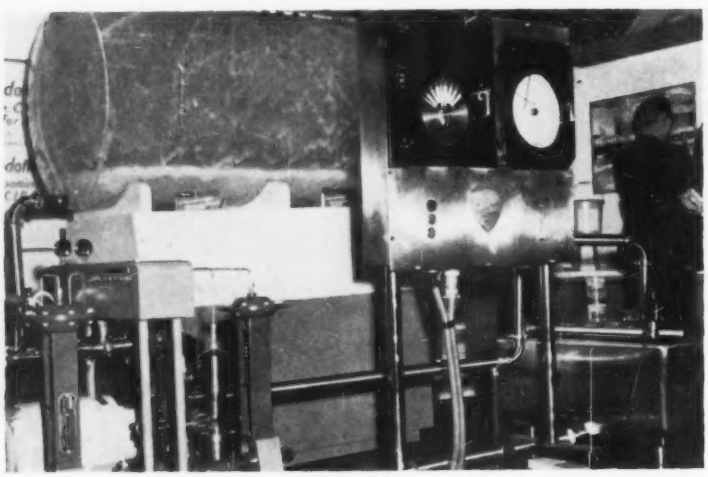
AUTOMATED PROCESSING and CIP. Former by use of semi-graphic panel (left) located strategically in plant to enable area control by operator. Central control panel (right) ties in with area panels for automatic cleaning. —*Tenor Co., Inc., Milwaukee.* (37)

Automatic Processing, Cleaning

V-SPRAY UNIT for permanent installation in holding tanks comprises 2 jet nozzles, meets 3-A Standards. One unit cleans up to 14-ft. long tank.—*Oakite Products, Inc. N. Y. C.* (40)



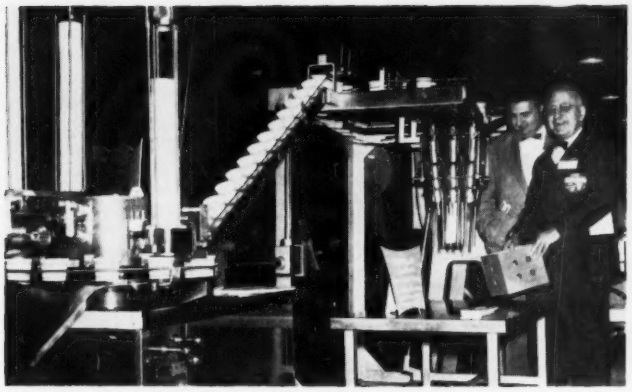
CIP SYSTEMS for large or small plants employ air-operated valves and controls, air blow-down and water rinse between each cleaning step.—*W. M. Sprinkman Corp., Milwaukee.* (38)



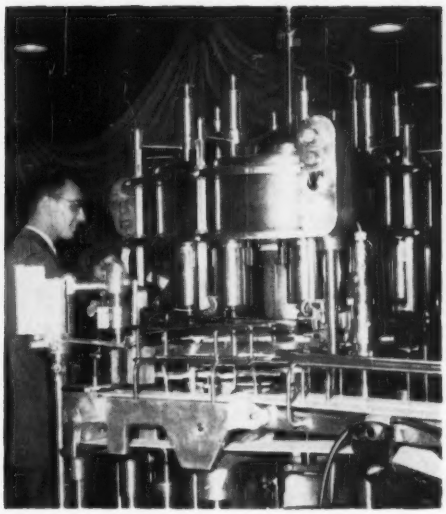
TANK CLEANING SETUP comprises in-place ball spray to be used with solution makeup tank, circulating pumps, controls and instruments supplied by dairy equipment manufacturers.—*Wyandotte Chemical Corp., Wyandotte, Mich.* (39)

IMPROVED HOT-WATER MAKER features water-pressure actuated check valve in steam line that stops steam flow in case of water failure.—*Strahman Valves, Inc., N. Y. C.* (41)

For Better Processing

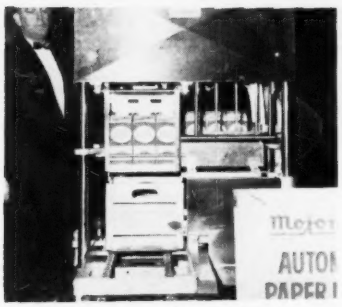


HIGH SPEED BOXER for 3, 3½, or 4-oz. cups packs up to 250/min. (24 to carton) with one operator. Attaches to new rotary filler and capper.—*Anderson Bros. Co., Rockford, Ill.* (42)

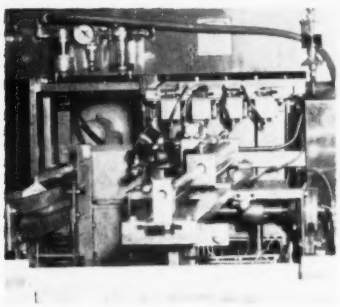


CARTON FILLER for all sizes of Canco containers operates at 100 qt./min., features 5-min. change-over, 30 min. cleanup. Has combination plug-clinching, marking unit.—*Crown Cork & Seal Co., Baltimore.* (43)

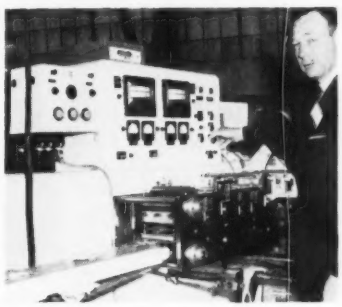
Packaging, Refrigerating Units



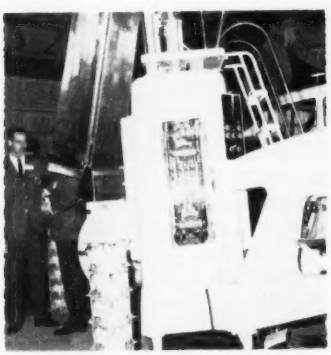
AIR-OPERATED CASER for paper or glass handles ½-gal. Pure-Pak cartons 100/min. Glass unit packs 160 qt. or 90 half gal. bottles/min., also smaller sizes.—*Mojonnier Bros. Co., Chicago.* (44)



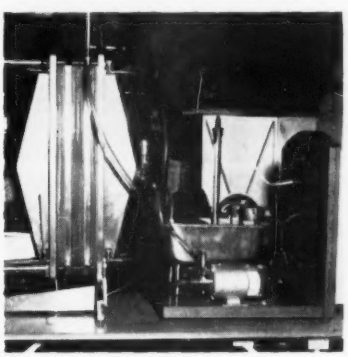
AUTOMATIC CASER for all types and sizes of paper cartons features air operation, gentle side pressure handling. Available in 2 models—single and multi-line infeed.—*Cherry-Burrell Corp., Cedar Rapids, Iowa.* (45)



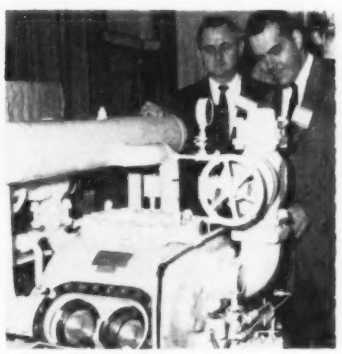
POUCH FORMER for gas-packaging sliced cheese, etc., uses roll-fed cello-poly or other heat-sealable materials, either opaque or clear. Registers one or both sides. Speeds to 40/min.—*Marathon Corp., Marathon, Wis.* (46)



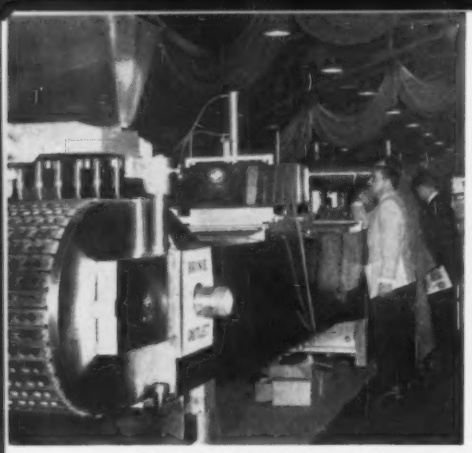
TETRA PAK MACHINE forms, fills, and heat-seals milk or ice cream in tetrahedron shaped plastic containers, then automatically packs them in cases. Uses plastic coated roll stock.—*Crown Zellerbach Corp., San Francisco.* (47)



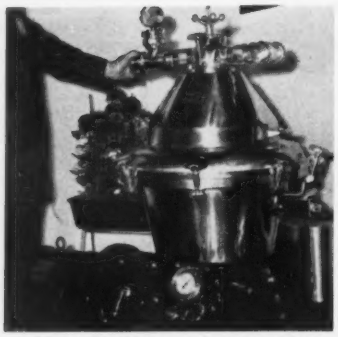
HTST LAB UNIT simulates plant conditions at 200-1,000 lb./hr. Comprises 3⅛x25⅝ in. plates, hot water set, pumps, product container, panel board.—*DeLaval Separator Co., Poughkeepsie, N. Y.* (48)



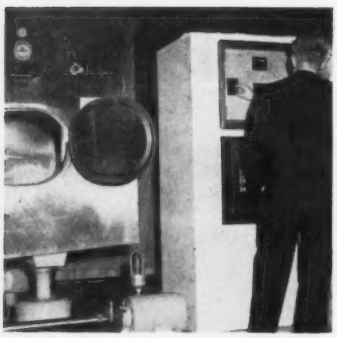
2-STAGE COMPRESSOR for low-temperatures has 3 banks, 2 cylinders each— 1st stage, 4 cylinders, 2nd stage 2. Has discharge gas desuperheater, 50% capacity reduction.—*Vilter Mfg. Co., Milwaukee.* (49)



STRAIGHT-LINE novelty machine makes 480 doz./hr. water ice, 600 doz. chocolate coated bars, with 2 operators. Chocolate dipper, defroster thermostatically controlled.—*Vitafreeze Equip., Inc., Sacramento, Calif.* (50)



SELF-CLEANING CENTRIFUGE for removal of protein from treated cheese whey, and other applications, discharges solids when desired amount collects in bowl.—*DeLaval Saparator Co., Poughkeepsie, N. Y.* (51)



AUTOMATIC WEIGHING system for any number of storage tanks comprises electronic load cells, indicating panel. This affords dial controlled fill, empty, or total positions.—*Cherry-Burrell Corp., Cedar Rapids, Iowa.* (52)

8 Working Aids

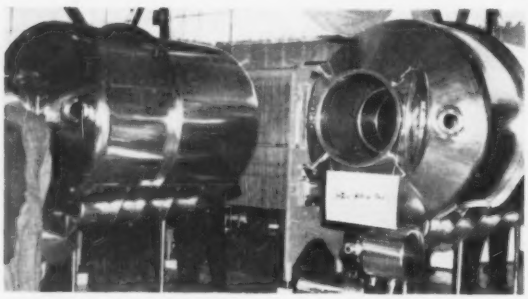
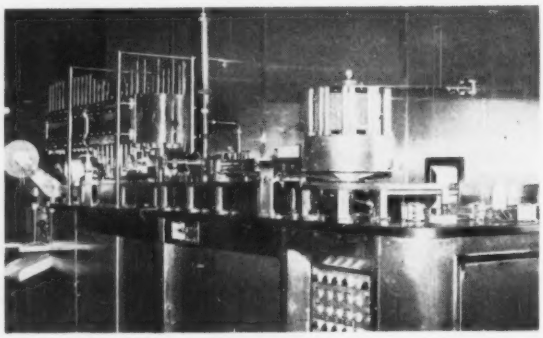
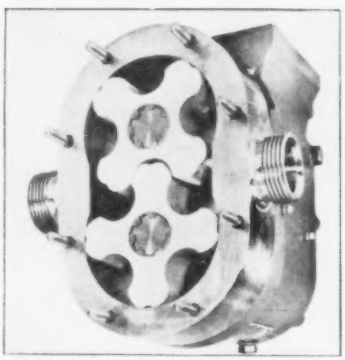


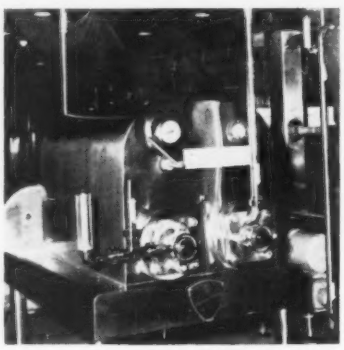
PLATE EVAPORATOR for heat sensitive foods is only 8-ft. high. Features single-pass climbing and falling film, low hold up, circulating cleaning.—*APV Co., Buffalo, N. Y.* (53)



AUTOMATIC STICK NOVELTY unit employs sub-zero air to freeze mix in individual molds on endless conveyor, then dip-coats, bags, deposits on boxing conveyor. Capacity 280-500 doz./hr.—*Polarmatic Corp., Dallas.* (54)



SANITARY DISPLACEMENT PUMP for fluids and semi-fluids features white rubber impeller that can be replaced for small fraction of cost of metal ones.—*Waukesha Foundry Co., Waukesha, Wis.* (55)



ULTRA HTST HEATER-COOLER for liquids and semi-solids performs efficient steam heating without film buildup or bake-on. Cools with water or direct expansion.—*Creamery Package Mfg. Co., Chicago.* (56)

INSTANTIZER for converting spray dried products into easily reconstituted agglomerates of reduced bulk density made in 3 sizes—350, 750, 1,500 lb./hr.—*Blaw-Knox Co., Mora, Minn.* (57)

More Topnotch Units

FILLER for Canco milk cartons handles 240 qt., 260 small containers per min. Has 38 filling stations, employs improved, quickly adjusted valves.—*American Can Co., N. Y. C.* (58)

COMPOUND 9-cylinder compressor for low temperature refrigeration operates on NH_3 or F-12.—*Frick Co., Waynesboro, Pa.* (59)

HIGH CAPACITY CENTRIFUGE (50,000 lb./hr.) for warm milk features special liquid seal, high skimming efficiency.—*Centrico, Inc., Englewood, N. J.* (60)

your product belongs

in glass by Brockway

Before your product is "in the bag" . . . it has to be in the basket . . . and between the shopping basket and the grocer's shelf, there is the matter of consumer acceptance. • Your product can have that consumer acceptance when it is packaged in an attractive glass container by Brockway. • At the point of sale only glass can do this job so well . . . only glass presents your product for quick appraisal and approval. • A product that is worthy of consumer acceptance deserves a quality glass container by Brockway.

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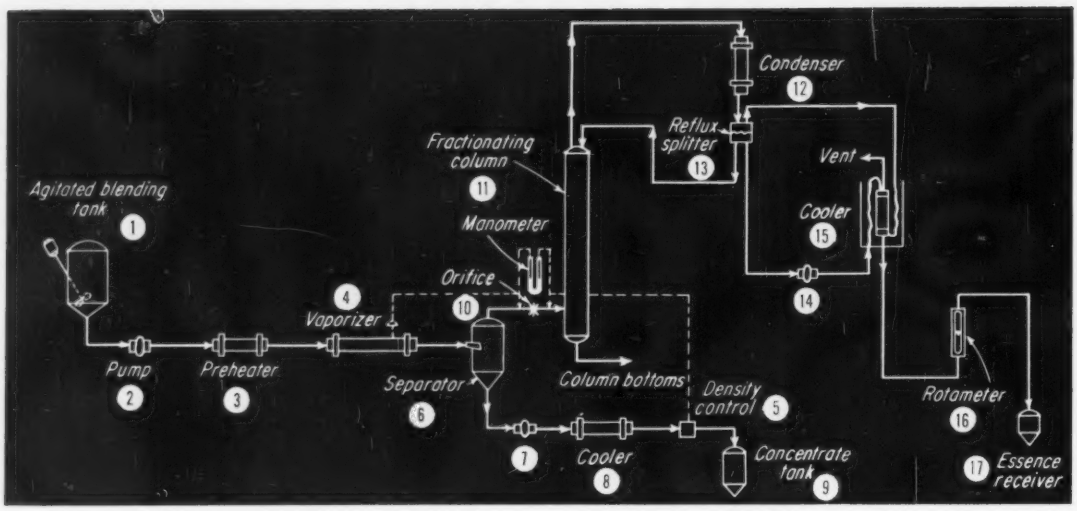

HOW SINGLE-ACTION SETUP OPERATES. Juice is pumped from blending tank (left) to vaporizer, where required amount of water is boiled off. Concentrate is separated, cooled, and stored in tank. At same time, flavor essence is recovered from vapor and accumulated in receiver (right). Sequence is detailed in text.

Concentrates, Strips Flavor in

Simplified technique combines essence recovery with water removal from fruit juices at atmospheric pressure. Elimination of old steps cuts capital investment, saves labor and floor space.

A DOUBLE FUNCTION is achieved in a striking new fruit juice concentrating process.

—For, in addition to preparing a product of the desired Brix, the process recovers practically all of the flavor aroma contained in the vaporized water.

Featuring single-pass operation at atmospheric pressure, the EURDD technique eliminates expensive vacuum equipment previously required for concentrating the stripped juice. This—

1. **Reduces capital investment.**
2. **Conserves plant space.**
3. **Saves labor.**

No Fouling Problems

Basis of the improved process is very rapid heating, concentration, and cooling, with simultaneous essence[1] recovery. This permits heating to the required vaporization temperature without fouling of the preheater, or affecting flavor of the final concentrate.

In the operation, sweetened or unsweetened depectinized juice readied in the agitated blending tank—(1) in drawing above—is fed at a controlled rate by positive delivery pump (2) to preheater (3). It's to be noted that the blending tank should have sufficient capacity to eliminate rapid fluctuations in density of feed.

Since depectinized juice is being handled, fouling of the heating surfaces constitutes no problem. However, velocity should be high enough to create turbulent flow and thus avoid local overheating.

After being heated to a few degrees above its boiling point, the juice enters vaporizers (4), where water necessary to produce the final concentrate is removed in a single pass.

To make a 72 deg. Brix concentrate, for example, it would be necessary to vaporize 89.4% by volume of a 10 Brix juice, or 82.6% of a 16 Brix juice.

Degree of vaporization is controlled by an automatic steam-throttling valve on the jacket of the vaporizer. This is actuated by a density control located at (5). In contrast to previous assumptions[2,3] that steam pressures in preheater and vaporizer jackets should not exceed 15 psi., it has now been found possible to use up to 75-psi. steam without flavor damage to apple or grape juice if velocity is above 20 fps.

Vapor and liquid (concentrate) are separated in a conventional liquid vapor separator (6). Then concentrate is pumped (7) through tubular cooler (8) to tank (9). Cooler should be designed for rapid performance, since the product is subject to heat damage.

The vapors, which contain sub-

RODERICK W. ESKEW, JOSEPH B. CLAFFEY, NICHOLAS C. ACETO, and NELSON EISENHARDT
Eastern Regional Research Laboratory, USDA, Philadelphia

TABLE I — RECOVERY OF METHYL ANTHRANILATE IS Not Greatly Influenced by Percent of Juice Vaporized

	Percent Methyl Anthranilate	
	With 30% Juice Vaporized	With 83% Juice Vaporized
Feed juice	100	100
Essence	19	42
Column bottoms	20	43
Stripped juice	61	15
Condensate	31	..
Concentrate	30	15
Concentrate + essence	49	57

TABLE II — HOW COLUMN HEIGHT and Rate of Reboiling Affects Recovery of Methyl Anthranilate

	Height of Stripping Column (in.)	
	7½	15
Rate of reboiling, (% feed rate to column)	21	31
Methyl anthranilate, (%)		
Fed to column	100	100
In essence	49	72
In column bottoms	51	28

1 Pass Without Vacuum

stantially all the aroma that was in the juice, are metered by orifice (10) and pass to fractionating column (11). Here, they are concentrated to produce essence of the desired fold. For example, a 150-fold essence has 150th the volume of the starting juice.

The fractionating column has an enriching section above the feed, a stripping section below it, and a reboiler at the bottom (where the rate of reboiling can be varied).

Aroma-enriched vapors from the column are condensed in unit (12) and cooled to about 190F. Essence is drawn off from reflux splitter (13) by positive delivery pump (14) through cooler (15) and via rotameter (16) to receiver (17).

In the cooler, the essence is used to scrub the volatile aroma fractions from the noncondensable gases. This is done by trickling the chilled essence down through a small packed tube while the chilled gases pass upward.

Mere chilling of the gases before venting condenses out little of these volatile components. The essence, however, is largely water, and when it is used as a scrubbing medium it can recover these valuable flavor components. When very high fold essences are being made, a column-bottoms scrubbing system[2] is desirable, entailing cooling of the condensed overhead vapors to about 90F. and reheating of the portion to be refluxed.

The rotameter (16) is required because the quantity of essence entering receiver (17) is the sum of essence withdrawn by pump (14) and essence recovered from the noncondensable gas. Since the latter will fluctuate appreciably with temperature of the condensate leaving unit (12), some method of metering the total from the two sources should be employed in order to obtain a product of uniform fold. That portion of the condensate not drawn off as essence is returned to top of column (11).

Advantages of single-pass atmospheric concentration (SPAC), lie in the simplicity of operation and elimination of a vacuum system.

In an operation where juice of 12 Brix is being converted at a rate of 400 gph. to a high-density concentrate of 72 Brix, and 150-fold essence is also being recovered, capital investment for the new system would run about $5,500 less than for one entailing essence recovery followed by vacuum concentration. There would also be savings in labor and space requirements.

Application to Various Juices

The SPAC process has been used successfully in concentrating the following juices: Grape, from 15.7 to 72.6 Brix; blackberry, from 8.5 to 72 Brix; blueberry, from 11.3 to 72 Brix; and peach, from 10 to 63 Brix; cherry, from 13.3 to 71 Brix; apple, from 12.5 to 72 Brix; and strawberry, from 8.5 to 52 Brix. In none of these cases was there any evidence of flavor damage.

Character of recovered essences, and of full-flavor concentrates made using them, was in every instance at least equal to that made by atmospheric essence stripping followed by vacuum concentration of the juice.

The process should also be suitable for other juices. Its application to Concord grape juice has some interesting aspects. Characteristic flavoring component of this juice is methyl anthranilate, which has a high boiling point at atmospheric pressure and is tenaciously retained. While the volatiles can be effectively stripped from most fruit juices by vaporizing small portions (i.e., apple juice requires 8-10% by volume; strawberry, about 20%; blackberry, 30%; and Montmorency cherry, 40%[4]) the odor of methyl anthranilate can be detected in grape juice from which 50% or more has been vaporized.

This led to the trial of a 2-stage process for more complete recovery[5].

Essence was made by stripping the juice as well as the condensate from the vacuum concentration of the stripped juice. Although effective, the extra steps were not considered justifiable.

The commercial process now in use is a compromise. It entails vaporizing about 30% by volume for aroma recovery and then depectinizing and vacuum-concentrating the stripped juice.

Here, the SPAC system would appear to be admirably suited for recovery of methyl anthranilate.

Indeed, the 83% vaporization

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needed to concentrate a 15.7 Brix grape juice to 72.6 Brix effectively strips anthranilate (see Table I). Under these conditions, 85% of the methyl anthranilate in the feed juice was stripped, in contrast to 39% at 30% vaporization.

Unfortunately, the mere release of more aroma elements does not necessarily improve their recovery as essence. Further reference to Table I shows that, in spite of the high release of aroma at 83% vaporization, only 57% of the methyl anthranilate appeared in the full-flavor concentrate.

This is not much greater than the 49% recovered at 30% vaporization. In fact, the difference could not be detected by a trained taste panel.

Reason for this loss is the difficulty in driving the relatively non-volatile flavor to the top of the column where it can be recovered in the essence. The table shows that regardless of the vaporization used, the methyl anthranilate lost in the column bottoms was about equal to that recovered in the essence.

A significant improvement in aroma recovery from grape juice can be obtained by increasing the height of stripping section and the rate of boiling. Table II shows distribution of methyl anthranilate calculated on amount fed to the column. Doubling the height of the stripping section and increasing the boilup rate from 21% to 31% increased the recovery of the methyl anthranilate from 49% to 72% of that fed to the column.

References and Bibliography

1. Manufacture and use of volatile fruit flavor concentrate is subject to regulations of Internal Revenue Service. See Code of Federal Regulations, Title 26, Internal Revenue 1954, Part 198 and subsequent issues.

2. Eskew, R. K., Redfield, C. S., and Phillips, G. W. M., *High-Density, Full-Flavor Apple Juice Concentrate*, USDA, Agricultural Research Service, AIC-315 (EURB) Aug. 1951.

3. Eskew R. K., Redfield, C. S., Eisenhardt, N. H., Claffey, J. B., and Aceto, N. C., *High-Density Full-Flavor Grape Juice Concentrate*, USDA, Agr. Research Service, AIC-342 (EURB) Sept. 1952.

4. Aceto, N. C., Eskew, R. K., and Phillips, G. W. M., "High-Density Full-Flavor Cherry Juice Concentrates", *The Glass Packer*, 32 (9): 54, 1953.

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Eskew, R. K., Phillips, G. W. M., Homiller, R. P., Redfield, C. S., and Davis, R. A. "Frozen Concentrated Apple Juice", *I&EC*, 43, 2397-2403, 1951.

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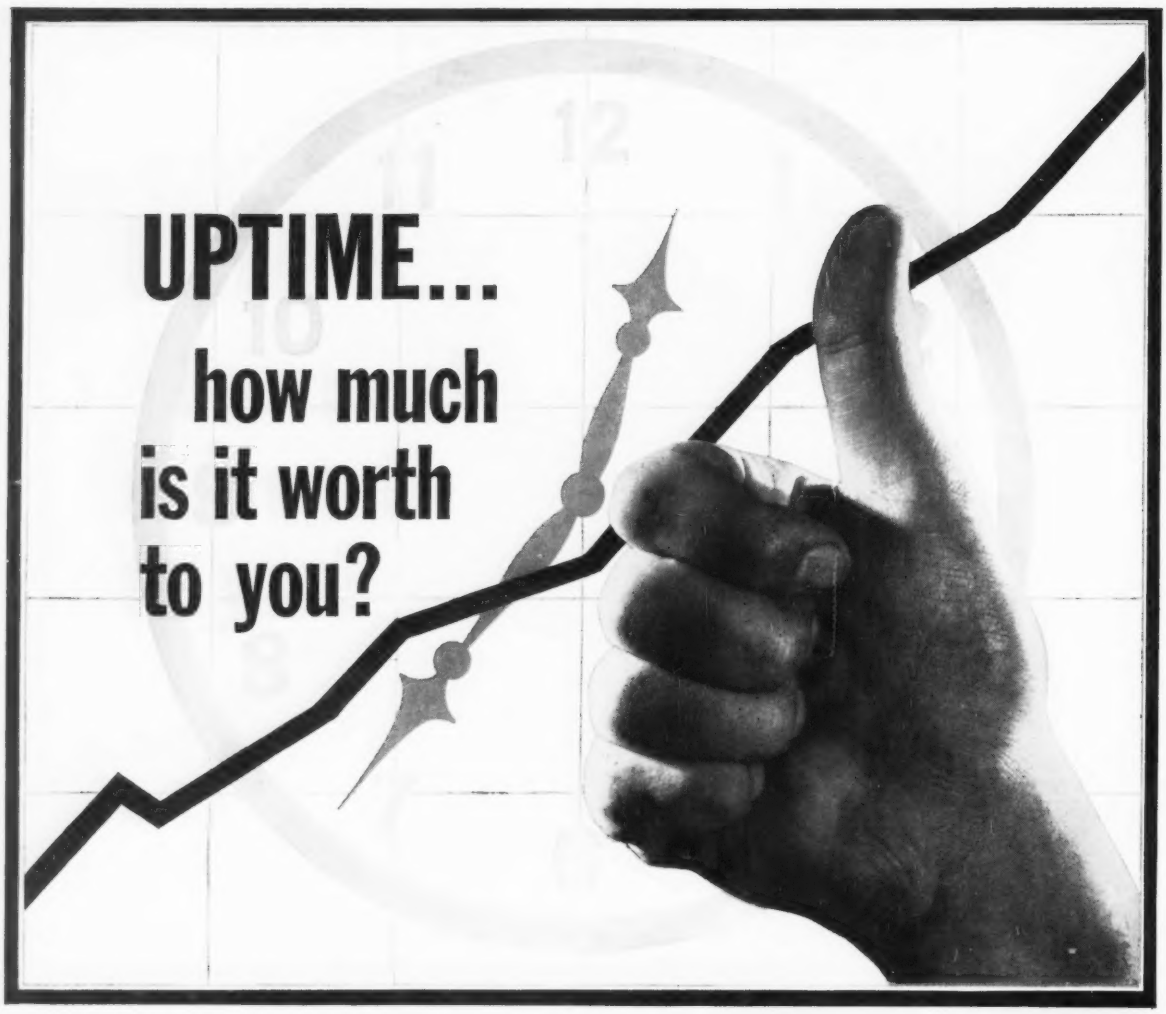
PACKING

UPTIME... how much is it worth to you?



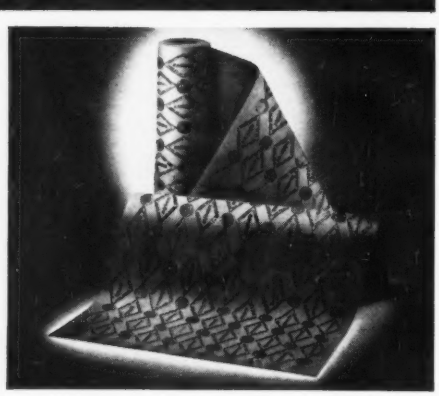
These days, everyone talks about *downtime costs*. Few consider how much *uptime is worth*—the great majority of time when production runs smoothly. How much is uptime worth to *you*, each hour? $100—$200—$300?

And how much are you willing to spend each hour for a packing that will help keep your pumps and flow lines maintenance free? 1¢—2¢—5¢?

That's the kind of money involved when you use a packing like U. S. Rainbow®—first in red sheet packing. Each extra hour of production uptime means hundreds of dollars in production, yet those same extra hours of packing uptime can be had for just pennies... the difference in cost between a quality packing like U. S. Rainbow and ordinary packings.

Rainbow is designed to pack flanges or other parallel surfaces against hot or cold water, air, saturated steam (up to 150 lbs.) and many other hydraulic conditions—and to pack them for longer hours of *uptime*.

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and the finest quality industrial rubber products.



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United States Rubber

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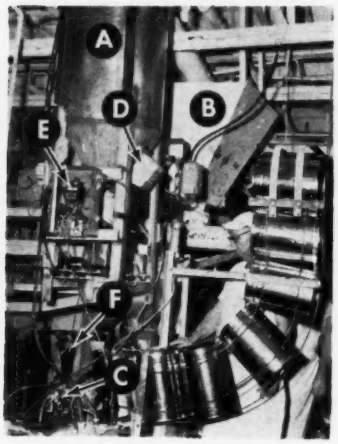


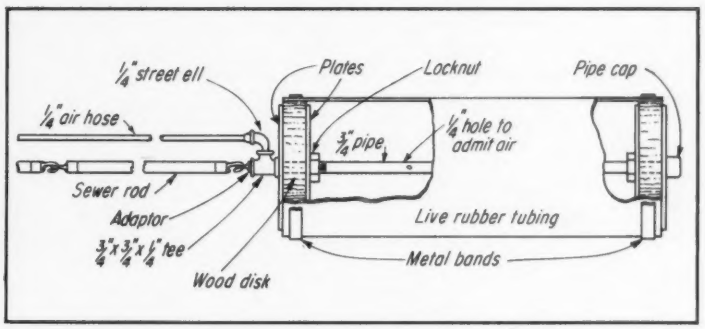
"Scales" Fruit and Sugar Into Cans Automatically

In several of our Michigan canneries, bulk fruits such as cherries are conveyed from pitting machines and filled into 30-lb. tins, along with necessary weights of granulated sugar to produce 2, 3, and 4:1 frozen packs. Manual scaling of the sugar required two men—one to weigh and add bulk of it along with the cherries, the other to "top" fruit with remainder. It also introduced errors.

Our solution to the problem lay in installation of two sugar hoppers (250- and 400-lb. capacities, A and B in photo) directly above can-filling station. Hoppers are equipped with vibrators and are filled from a 10,000 lb. storage bin by screw conveyors. From hoppers, sugar is automatically weighed and gravity fed to cans.

Operation starts with delivery of cans to fruit filling machine by gravity. Here, container strikes limit switch (C) which simultaneously actuates vibrating feeder (D) and time-delay relay (E). Former charges sugar into can along with fruit from filler. Timer is set to cut off flow from hopper (A) when desired weight has been fed.

After cans are filled to pre-set weight, indicator on Exact Weight scale (F), breaks light beam of a photocell which, in turn, actuates a pneumatically operated volumetric filler. This unit tops fruit in can with 2 lb. of sugar. Filler is fed from hopper (B). Its cylinder discharges on forward stroke and refills on reverse one.—*A. E. Brown and L. Phillips, Michigan Fruit Canners, Inc., Benton Harbor, Mich.*



Break in Underground Water Pipeline Pinpointed by Inflated Rubber Tube

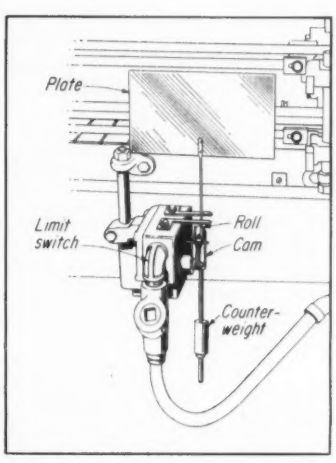
Here's a device I've found indispensable for locating breaks in cast iron or Transite water lines under driveways or paved streets.

An opening is dug at side of driveway where water line enters to provide room for manipulating a sectional sewer rod. In most cases a fitting at this point can be removed and the line blanked off and put back into service.

My device (sketch) which comprises a live rubber tube fastened to wooden disks by metal bands, is fastened to a section of sewer rod. Air hose is attached to device (sketch), then it is inserted in the pipeline and moved in the direction of break. When device is about 20 ft. from hole, air pressure of about 10 lb. is applied. This inflates the tube, which then acts as a valve in the pipe line.

An air line is also fastened to opposite end of pipe and air at 5-lb. pressure admitted. If this leaks out, shut off supply, release pressure from device, move it further into pipeline, reinflate and test as described above. When pressure of 5 lb. holds constant, device is beyond break in pipe. It is then pulled back a short distance at a time until point where pressure drops is located. By moving device back and forth at this point, exact location of break is dedetermined.

By measuring total length of sewer rod sections used, exact point at which street must be excavated is given.—*Clayton S. Benner, 2440 Delbert Rd., Columbus, Ohio.*



Prevents Bottle Jam-Ups

When trouble develops with a capper, backup of filled containers can produce problems. To prevent this, an air jet safety device has been developed to shut off the filler.

Device comprises 2 air jets at 5-lb. pressure directed across the conveyor at an aluminum plate mounted on metal rod (see drawing). A limit switch is used as the fulcrum point of the rod, and a small cam works against the switch lever arm roll. Counterweight is mounted near bottom end of rod.

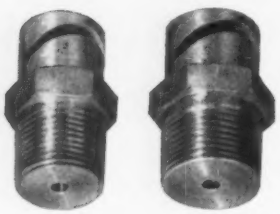
By positioning air jets slightly farther apart than width of containers, one jet will be playing on the plate

GET MORE OUT OF YOUR SPRAYING EQUIPMENT WITH LESS POWER

For spraying, washing, rinsing and cooling, Yarway Spray Nozzles will improve the efficiency of your spray equipment.

There are no internal vanes or other restrictions to clog or hinder the flow.

Cast bronze Involute-type
(Bar stock also available)



Bar stock Fan-spray-type

Yarway Spray Nozzles are available in two types—the Yarway Involute producing fine hollow cone spray with minimum energy loss, and the Yarway Fan-spray for flat fan-shaped spray with time-saving slicing action for cleaning.

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YARWAY spray nozzles

Practical Ideas

when capper is operating normally. But when containers accumulate to form a solid line, both jets will be blocked allowing plate to move toward conveyor. This actuates limit switch shutting down filler. When line is cleared filler must be started manually.

Rod is balanced by changing position of counterweight. Final adjustment is made with limit switch, which is mounted on a hinge and has adjustable set screws on front and bottom.—*Pneumatic Packaging, pub. by Pneumatic Scale Corp.*

Plastic Hoe Solves Yeast Harvesting Problem

Harvesting yeast from the floor of flat bottom fermenting tanks presented a 3-fold problem: (1) It had to be done from the outside, (2) device used had to be of material softer than the Epoxy lining of the tank, and (3) tanks are 20 ft. long and aisles are only 6 ft. wide.

To do the job, we devised a plastic hoe (photo) constructed on a rectangular frame with a hinged flapper. When hoe is slid into tank, flapper rises and rides on top of the yeast bed. Then when hoe is pulled toward the front, flapper drops into position and brings a quantity of yeast.

Handle of device comprises 5-ft. sections of plastic pipe. These are attached, by means of plastic couplings, as the hoe is pushed into the tank. As yeast is pulled forward, pipe sections are removed. This is repeated until the entire crop is fed to the sanitary pump connected to the tank outlet.

Hoe and frame are constructed of Goodrich Koroseal polyvinyl chloride. Joints are secured by tetrahydrofurfuryl solvent cement.

Hoe is easy to assemble and use and is kept sanitary by scrubbing with chlorine solution.—*William Hamilton, Asst. Brewmaster, Blitz-Weinhard Co., Portland, Ore.*

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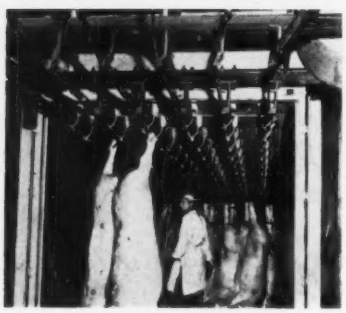


Rails Speed Meat Handling

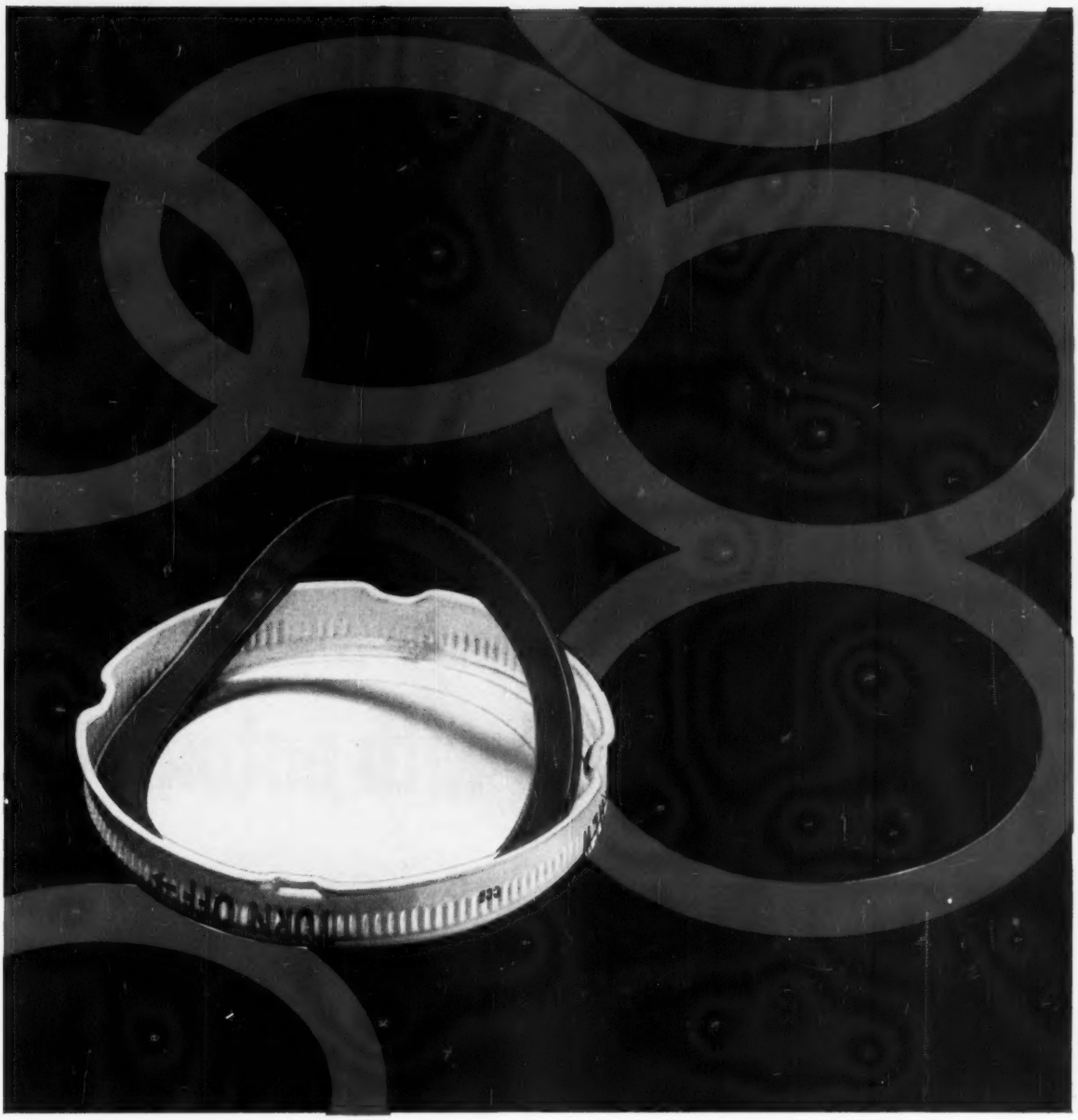
Here's an idea that has quadrupled the speed of handling hog carcasses between refrigerated trailers and packing plants.

When Hyman Transportation Co., Minneapolis recently ordered four new refrigerated units for hauling hog carcasses between slaughtering and packing plants in Minnesota and N. Dakota, the company had them equipped with meat rails.

Each of the 38-ft. trailers (built by Brown Trailer Div., Clark Equip. Co.) has 6 trolley rails (photo) exactly matching, position-wise, those inside the two widely separated plants served by the company.

Instead of using carts to move the carcasses between trailers and plants, laborers now push the hook-hung meat directly into plant or trailer, four times faster than by the previous method.

Rails are lightweight aluminum that have little effect on payloads. They fold back when not used for meat, enabling company to backhaul farm machinery, groceries and other commidities.



CROWN...only source for lug caps with LIVE RUBBER RINGS

This exclusive Crown combination gives packers a closure that quickly, completely seals in product quality on the packing line and in homes of users. *Live rubber best withstands* live steam temperatures . . . *will reseal again and again* . . . and Crown live rubber liners *will not stick to glass.*

Crown developed a special glass finish that permits easy cap application and prevents any backing off of the cap as in some types of finishes. When the Crown lug is applied to this finish, you have a mechanical as well as a vacuum seal. Crown is ready to meet all your closure needs.

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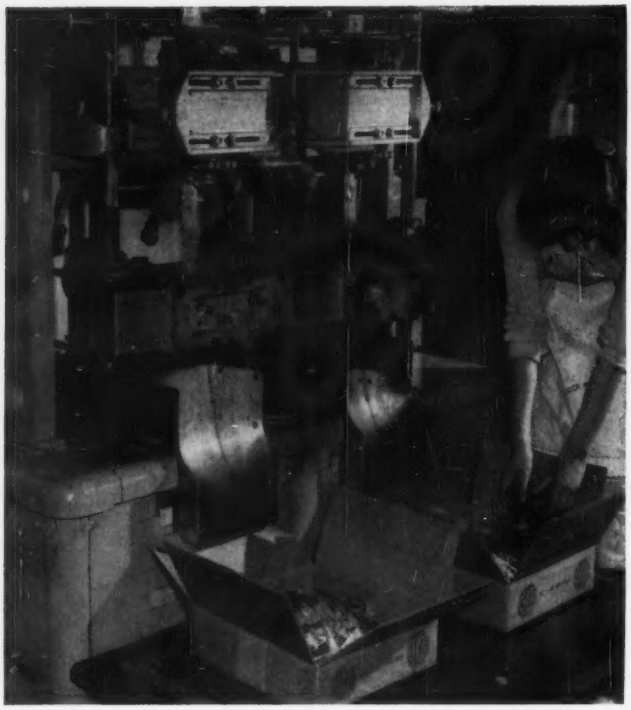
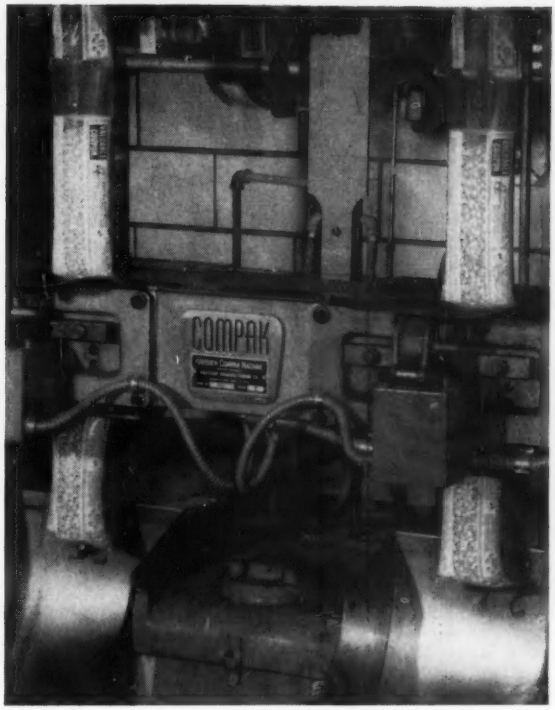


SOY SAUCE is automatically packaged in individual portions by Lekel Chop Suey Pail Co., Chicago, using a film coated with BAKELITE Brand Polyethylene. Pouches are filled and sealed at the rate of 20,000 per day. The polyethylene forms a strong, instant heat-seal and is inert to the salt in the soy sauce.

Foods move faster with automatic

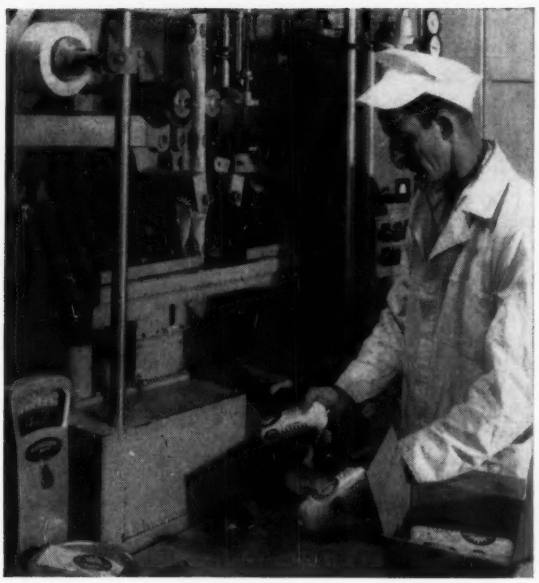
UNCOOKED SAUSAGE MEAT is automatically packaged in preprinted polyethylene film at high speed by Sunnyland Packing Co., Thomasville, Ga. This machine heat seals, stuffs, clips and fastens the attractive one-pound packages.

MARSHMALLOWS are packaged fast in polyethylene film by Walter M. Lowney Co., Ltd., Montreal. This machine makes the bag, weighs the marshmallows, fills, seals and discharges the package . . . *automatically!* And the polyethylene film helps sales, improves shelf life.



POPCORN, like other dried grains and cereals, is ideally suited to automatic packaging in polyethylene. Princeton Farms found that polyethylene keeps exactly the right amount of moisture in the popcorn. Tough and flexible, it demonstrates far longer shelf life than cellophane.

packaging in polyethylene



They're packaged fast and they sell fast – in materials made with BAKELITE Brand Polyethylene. Strong, sparkling clear, inert to food chemicals and resistant to moisture, polyethylene forms a strong heat-seal to provide protection and packaging speed for your product. As the lowest-cost transparent packaging film you can get, with striking eye-appeal and printability, it's a bargain as a self-service selling device. Ask your packaging supplier, or write Dept. AT-69M, Union Carbide Plastics Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. *In Canada:* Carbide Chemicals Company, Division of Union Carbide Canada Limited, Toronto 7.

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BABY MEATS are eagle-eyed in daily line routine. Samples are selected statistically. Check-points include texture, flavor, consistency, stability, foreign material, vacuum, appearance.

HIGH CALIBER of packer's control personnel is typified by Inspector Gene Sargent, seen checking sausage operation. He's had earlier company experience in engineering time studies and accounting, now attends U. of Minnesota evenings for special Q.C. courses.

Armour's New Profit-Building

How pace-setting packer gets maximum product reliability through latest in-stream checks, statistical techniques

ROCKETING consumer demand for higher quality foods—backed by willingness to pay for them—is radically changing the picture of quality requirements.

This means that processors bent on expanding their distribution and profits are finding it necessary to streamline their working concepts of food quality. Particularly, there's a need for sharper controls.

It's this kind of thinking that spurred Armour and Company into its new SQC (statistical quality control) program, recently launched at St. Paul and already extended to half the company's producing units.

Moreover, experience this packer gained in improving production of sliced bacon—first item under the new SQC regimen—has now been applied to sausage, canned foods, frosted meats, and purchased ingredients and supplies. And soon to be included under the new controls are production of smoked meats, dry sausage, and certain fresh meats; manufacturing materials (trimmings, etc.); and car-and-truck loading.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

The system is paying off handsomely, by . . .

. . . **reducing defects and improving general level of product quality.**

. . . **predicting quality with greater reliability.** Analysis of equipment performance, sampling tables, and other techniques—clearly show the way to protect and improve the company's high reputation for quality.

For example, performance of the bacon-slicing line and many other processes have been precisely charted. With such sampling techniques, number of expected variations or defects can be predicted for a given number of packages coming off the line. Should the number and degree of defects exceed a predetermined acceptance quality level, line inspectors take immediate corrective action—either human or mechanical—and dispose of substandard product.

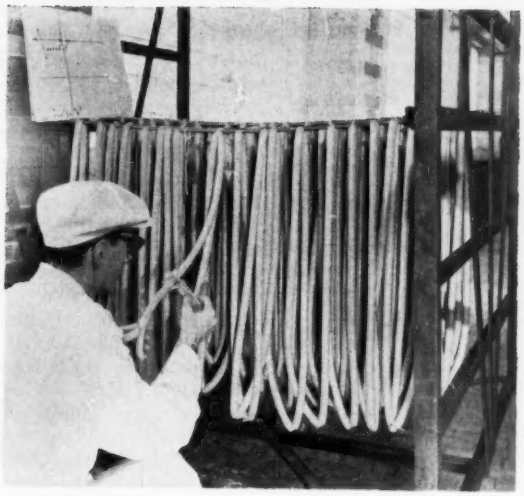
. . . **simplifying operations.** The approach to quality control is positive. It prevents poor quality rather than necessitating costly corrections afterward. Plants now have a running account of product quality and keep problems from snowballing.

. . . **saving money.** A major objective of the SQC is to reduce costs. In-process controls minimize need for further corrections or costly adjustments along the production line. Also cut is costly waste of materials that don't meet quality specifications.

Setting up specs for the purchase of incoming supplies and raw materials takes the guesswork out of buying, saves money, too.

. . . **establishing better relations with suppliers.** Periodic rating of a supplier's quality performance aids the purchasing department in quickly bringing satisfactory or unsatisfactory quality performance to attention of vendors.

. . . **controlling package weights.** Weight control of sliced bacon has saved many thousands of dollars by eliminating overweight packages while assuring proper net weight.



VIENNA SAUSAGE is precisely calipered. With this product, even a 1-mm. deviation in diameter calls for on-the-spot correction at stuffing table to hold sausage weights in line. Note chart (upper left) upon which data are recorded.

SLICED BACON gets exacting weight and quality checks. Hooked electrically with scale mechanism, screens (foreground) flash instructions to operators as to just how much bacon to add or remove for precise package weight.

Quality Control

It's been done through studies of process quality capability to determine weight limits within which slicing machines should operate.

. . . **keeping customers satisfied.** Take the case of hamburger meat sold to the institutional trade. Maintaining the fat content at the accepted level keeps customers happy. Their fried hamburgers don't toughen or shrink when there's too little or too much fat, respectively.

The new Q. C. department—

1. Maintains an economical system for controlling all variables affecting quality of products.
2. Assumes responsibility for quality and volume of products shipped.
3. Operates on the staff level, does not report to production.
4. Coordinates efforts of sales and production in establishing and revising company's quality objectives.

To carry out these tasks, quality control personnel must . . .

. . . inspect and evaluate such plant operations as scaling, processing, packaging, shipping, and housekeeping.

. . . sample, inspect, and analyze supplies, raw materials, products in process, and finished merchandise.

. . . hold and call to plant manager's attention supplies, ingredients, and products not up to specs.

. . . keep records of quality performance and submit them to plant manager and headquarter's director of quality control.

. . . advise plant manager and director of quality control of the manner in which sub-standard materials are disposed.

. . . instruct quality control personnel in use of new techniques and facilities.

. . . inform production control of all quality control activities likely to affect formulations and operations.

. . . review production control procedures to maintain economic balance between inspection costs and product quality.

. . . tell industrial engineering of quality control activities that might change methods and standards.

. . . submit reports of incoming supplies and materials to purchasing department for evaluating and comparing shipments received.

. . . cooperate with accounting department on activities dealing with yield studies, waste reduction, labor savings, etc.

Taking Products Apart

Let's see how the program is actually put into use in examining a planned statistical sampling of packages coming from production.

Working from a checklist, a quality control line inspector literally takes the product apart, by charting actual performance against specifications to provide impartial evaluation of product quality.

Here, for instance, is what he checks in Armour Star sliced bacon (tray-pack, pan size, 16 oz.): Foreign or extraneous matter, odor, condition, age (from smoking to slicing and from slicing date), net weight, "buttons" (cartilage), color, texture, slice width and length, trayboard arrangement, shingling, crevices in slices, split between fat and lean, machine overwrap, visual similarity, partial slices, shipping container, and container's closure and stenciling.

In each of these categories, inspector looks for specific defects according to standards. For example, a slice width of less than ¾ in. or over 1¼ in. is a defect. So is irregular spacing between slices.

The various defects fall into Critical, Major I, Major II, or Minor groups. Examples: Foreign or ex-

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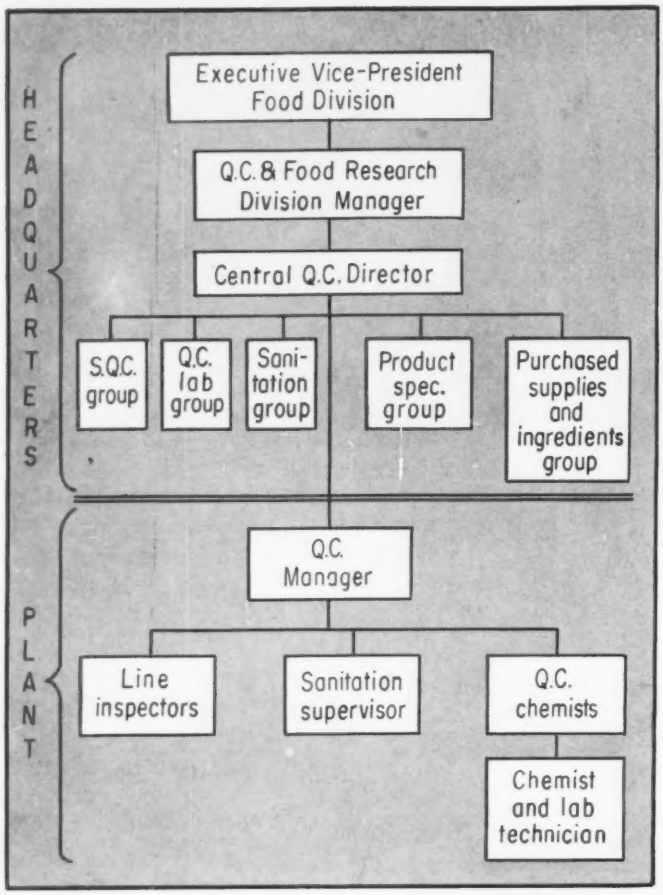
SQC Organized by Headquarters & Plant Teams



traneous matter is a Critical defect; color, buttons, and slice width and length, Major I; slice arrangement, Major II; and container stenciling, Minor. For each group, there is a minimum acceptable quality level.

In cases where defects are too far out of line, inspector puts a "hold" tag on the lot. He then calls in the plant manager, superintendent, and quality control manager to check and accept or reject the lot.

Teamwork Does It

Armour's team system is supervised by properly trained, experienced personnel working together and with related departments. It has the full cooperation of management, which recognizes the quality control department's authority to establish standards and enforce them.

In many respects this quality control organization is typical. It has a headquarters service team and another one operating at plant level. The central (headquarters) quality control director is responsible to the quality control and food research division manager. He, in turn, reports to the executive vice-president of the Foods Division, who heads these five groups:

1. Statistical Quality Control. It's responsible for supplying to plant's quality control people mathematical service as applied to up-to-date control practices. Among the new technical tools it employs are the aforementioned studies of process quality capability, tolerance-analysis techniques, pilot-practice runs, and a wide variety of statistical methods.

In addition, this group provides initial services to start plants on the program as a result of checking 'quality-ability' of products and processes, and by de-bugging quality problems. With continuous control of in-process quality thus established, plants receive a sampling plan (number and frequency of samples) along with instructions on accumulating and charting of data.

2. Purchased Supplies and Ingredients Specifications. Along with food research department, this group sets up performance specs for package supplies and food ingredients ordered by purchasing department. It makes routine checks to determine if these materials meet specs, and helps plants whenever questionable materials are being received.

3. Product Specifications. It consults with sales and production departments, finds out what sales wants in a product and if production can produce it, and then spells out standards precisely.

4. Sanitation. It establishes plant sanitation and cleanup procedures, adopts or rejects new sanitation practices and materials.

5. Quality Control Lab. It offers to plants analytical and arbitration services pertaining to test methods and quality of incoming and outgoing materials.

In general, the headquarters team services plants by issuing instructions on controls and inspections. It provides guidance and technical assistance, acts as a clearing house on exchange of new practices, and reviews weekly quality control reports.

On the front lines is the plant's quality control manager, who supervises all factory control operations and reports to plant manager and central quality control director. Under him are quality control chemist, sanitation supervisor, and line inspectors.

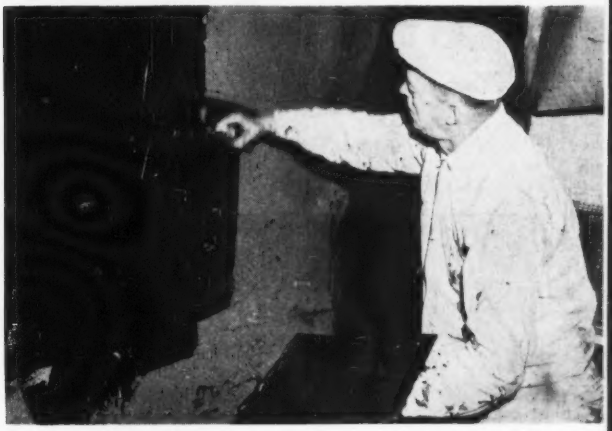
Line inspectors, all with previous company experience, are given special training (generally a week's course), and are usually assigned to one department, thus becoming experts in their product. They are taught to make tests, record measurements, and draw working charts and graphs based on their findings. Frequently, their graphs pinpoint a production variable for correction.

An inspector learns to work closely with the department foreman, helping him keep quality production running smoothly. In addition statistical data are assembled and recapitulated to serve as a continuing check and control.

Periodically, plant men "go back to school" in Chicago to brush up on principles and practices of SQC as well as new techniques. Conducting these week-long courses are several university and industrial quality control experts. —*End*

Gas-Tight Storage —*Without Metal Liner*

Special insulation provides full vapor barrier in latest controlled-atmosphere produce rooms



COSTS GO DOWN in new insulating method. Cellular glass blocks used are impervious to air and moisture, thus need no metal vapor barrier. Plasterer is seen applying asphalt emulsion to blocks, which seals them.

A NEW WAY to insulate controlled-atmosphere produce storage rooms utilizes cellular glass material This acts as its own vapor barrier–and so opens the door to lower-cost construction and more efficient operation of such facilities.

Prime feature of this insulation is complete impermeability to air and water vapor. Thus, when properly installed, it offers an efficient vapor seal without use of the customary–and costly–metallic barrier.

Superior performance of the material (Foamglas, Pittsburgh Corning Corp.) was reported in experimental storage tests. And it has now been demonstrated in several commercial apple-storage installations.

These results suggest application of the technique to other produce stored in controlled atmosphere, notably pears.

How Technique Evolved

In early attempts to adapt coolers for controlled-atmosphere storage, complete metal liners (generally of sheet stock) were used to achieve the necessary degree of gas-tightness. The lining practice has since been refined, but it still depends on use of metal sheets, which have a serious drawback: The metal liner provides a better vapor seal *on the wrong side* of the insulation, the cold side, than on the proper, or warm side.

Thus, with outside temperature higher than that of the room, water vapor gradually seeps into the insulation, where it condenses and collects. In addition to losing most of their insulating ability when wet, conventional insulations swell, warp, rot, or otherwise fail.

Since cellular glass insulation is impervious to air and water vapor, and had been used with metal liners without getting wet or otherwise deteriorating in service, the next logical step was to eliminate the liner. This was though feasible because joints between blocks of insulation, which comprise less than 1% of the total area, are the only passages through which leakage can occur. Simplest method of achieving a positive gas seal at these joints is to cover the entire surface, including joints, with an inexpensive mastic.

As an extra precaution, mastic should be applied in two thin coats that sandwich a glass fabric, which serves as reinforcement. Total thickness of this finish is about $\frac{1}{16}$ in. While it offers reasonable resistance to bumping and abrasion, the finish can be punctured more readily than sheet metal. However, such a puncture rarely results in leakage, for this reason:

Since mastic is sealed tightly to the insulation surface, there can be no lateral transfer of gas between finish and insulation. Therefore, unless the puncture occurs precisely at a joint (against 99 to 1 odds), no leakage results. And even if a joint were penetrated, chances are good that the joint itself would remain sealed by the hot asphalt or cold adhesive employed in installing the insulation.

In pilot testing of a controlled-atmosphere room, insulated as described, air-pressure tests were run before and after extensive temperature cycling, which simulated years of service.

The minimum gas-tightness recommendation for a controlled-atmosphere room stated that the return to atmospheric pressure from an initial gauge pressure of 1 in. of water should require at least 20 min. The glass-insulated test chamber consistently showed 50 pressure retention after 2 hr., and took over 4 hr. to return to atmospheric pressure.

Get Grower's OK

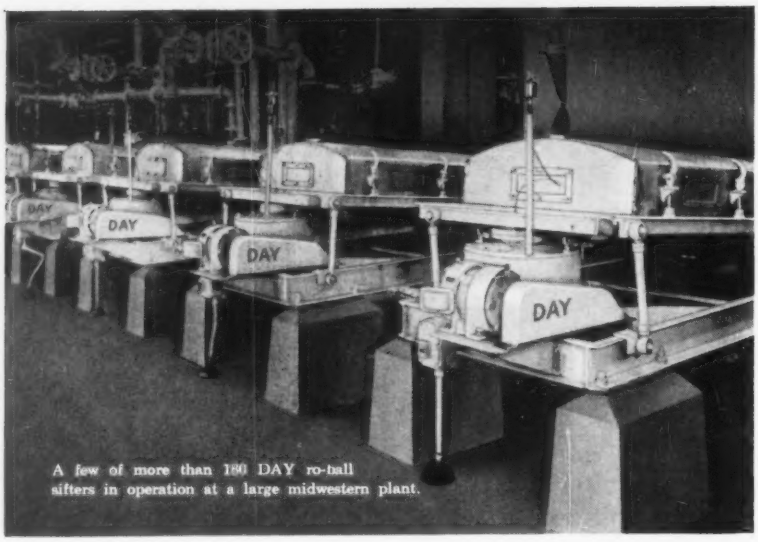
Typical of the insulation's efficiency in commercial operations are the impressive economies achieved in controlled-atmosphere storage of apples at B. H. Wallingford Orchards, Auburn, Me.

Says General Manager O. R. Wallingford: "After five month's storage in our first glass-insulated room, the 24,000-bu. crop emerged in the same fine condition as the day it came off the trees. Furthermore, this insulation enabled important savings in construction costs, since it has given us an efficient vapor seal without use of a metallic barrier.

"In addition to being thermally efficient, moisture-proof, and vermin-proof, this material will not burn, a factor which we confidently expect will lower our insurance rates."

Storage facilities at Wallingford have now been expanded to four chambers, two measuring 54x35 ft., and the others 54x40 ft. and 40x20 ft. Each room is 19 ft. high, and there is a 2-in. thickness of insulation in floors, 4 in. of the material in ceilings and exterior walls. A total of 80,000 board feet of insulation was used.

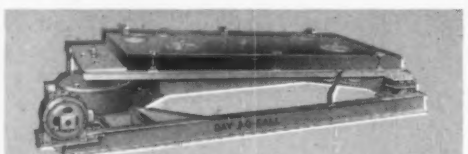
SIFT finer-faster-cleaner with DAY ro-balls

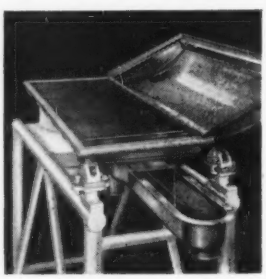


A few of more than 180 DAY ro-ball sifters in operation at a large midwestern plant.

Today thousands of products wet or dry, from flour to wood chips, are sifted through efficient, low-cost, high-production DAY ro-ball sifters. Superbly engineered, built for trouble-free operation under the severest service conditions, they insure longer life with lower maintenance costs.

The exclusive super active ball cleaning device provides rebound points in each ball compartment, assuring fast, thorough sifting of your product. Gyrating action brings material into constant contact with every square inch of screen surface. A stabilizer maintains screen in horizontal position and insures smooth operation.


DAY standard ro-ball, available in six sizes, single or multiple screens. Single screen models in stock.


Stainless steel units available to meet food and dairy sanitary codes.

Many models are available so it is easy to choose one which will exactly suit your requirements. They can be used separately or in combination with DAY mixers or blenders to save product handling. A completely equipped lab is available for testing your product.

Write for new DAY ro-ball Bulletin.

The **J. H. DAY** *Co.*

Division of The Cleveland Automatic Machine Co.
SERVING THE PROCESS INDUSTRY SINCE 1887

4924 Beech Street, Cincinnati 12, Ohio

Dry-Milk Problems In Sharper Focus

Lines of attack indicated by technologists in Wisconsin U. conference

Factors impeding growth. Among obstacles to greater sales of dry skim milk are–

1. Belief among public health officials that product is made from inferior grade skim.

2. Use of improperly pasteurized milk and/or drying temperatures and conditions favorable to growth of food-poisoning bacteria. Here, single-pass evaporator may have advantages.

3. Powders with too low bulk density that occupy too large a volume for given package weight.

4. So-called "low-heat" powders that do not meet specifications because of failure to include all sources of processing heat in evaluation of treatment.—*S. T. Coulter, U. of Minnesota.*

Challenge of flavor. Foam-dried whole milk that readily disperses in cold water loses fresh flavor in less than 2 weeks when dried to below 3% moisture. But fresh flavor is retained 10-13 weeks when moisture content is in 3-5% range.

Process at present is of batch type, featuring low-heat exposure and minimum oxygen content. It involves vacuum concentration of flash-pasteurized whole milk, homogenizing, nitrogen gas impregnating, followed by vacuum drying to foam.

Higher moisture contents curb deterioration of fatty components. Lower contents protect non-fatty components, also aid solubility. Still to be arrived at is best compromise. Heat treatments are being studied to find time and temperature conditions that will stabilize product further without significantly impairing original good flavor and dispersibility.—*N. C. Aceto, EURDD, Philadelphia.*

'Tailoring' aspects weighed. Key to special dried milks is a forewarming treatment. For cottage cheese, skim is held 30 min. at 145.; for breadmaking, 20-30 min. at 185-205F. Evaporated milk is stabilized by forewarming at 180-205F. for 20-30 min. Age thickening of sweetened condensed is checked by 30-min. treatment at 150-175F.—*A. M. Swanson, Wisconsin U.*

GOT A FOOD PROCESSING PROBLEM

Sunkist technical advisers...over 400 different citrus products for industry...can help you solve it!

SUNKIST KNOW-HOW produces the finest citrus products to be had. That same know-how—the backlog of more than 60 years experience—and those citrus products—over 400 of them—can help solve your food processing problem.

Every course on the American menu has profited from Sunkist research or Exchange products. We've made a good condensed soup glorious by adding a few ounces of Exchange Lemon Juice to *100 gallons* of it. We have stopped pies from "bleeding" by using Exchange Low Methoxyl Pectin in the filling.

And between soup and dessert, we've devised enough manufacturing processes for the benefit of the American food processor to get Sunkist 118 separate U.S. patents!

Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research department. Write—or, if it's urgent, telephone—and a Sunkist man will call on you.

Sunkist Growers

Exchange

PRODUCTS SALES DEPARTMENT • ONTARIO, CALIF.

EXCHANGE BRAND CITRUS PRODUCTS widely used by leading food processors include: *Lemon Juice...Orange Juice...Orange Oil... Lemon Oil...Frozen Orange Puree...Frozen Lemon Puree... Preserver's Pectin...Low Methoxyl Pectin.*

Dyna-V is entirely new. In every detail, Dyna-V has been engineered to take advantage of today's great improvements in belt materials and metal alloys—resulting in V-belt drives that are sensationally compact.

Dyna-V is capable of handling up to three times as much horsepower in a given space. Dyna-V opens vast new possibilities for better, more economical machine design. And, in most instances *Dyna-V costs less!*

An entirely new high in strength and horsepower capability is packed into Dyna-V Belts. Cross section dimensions are substantially reduced—top width is much narrower. Dyna-V Sheaves are designed for these belts. Narrower grooves reduce face width—and weight. Costs are lowered. Smaller diameter sheaves and shorter center distances multiply savings.

Increased sheave strength for increased capacity is obtained through changes in design that utilize the full benefit of modern improvements in alloy metals. Dodge is noted for the superiority of its semisteel castings, to which now have been added ductile iron castings produced with the most modern electric furnace facilities.

Dyna-V Sheaves are equipped with Taper-Lock Bushings. The superiority of this mounting, patented by Dodge, is widely recognized. Taper-Lock's holding power is terriffic, yet it is "easy on, easy off." And Taper-Lock Bushings provide the additional advantage of interchangeability.

The benefits of Dyna-V go beyond compactness and initial low cost. Smaller sheaves reduce shaft overhang—increase bearing life. The dimensional stability of Dyna-V Belts (which are heat resistant, oil resistant, static conducting) solves the problem of belt matching. Every belt carries its full share of the load. The crowned top of Dyna-V Belts is a new concept in belt design. Combined with proved concave sidewall construction, it insures perfectly even load distribution between belt and sheave.

A complete bulletin on Dyna-V, including drive selection tables, will soon be ready. If you want one of the first copies, write us at once. Or see your local Dodge Distributor.

DODGE MANUFACTURING CORPORATION
2800 Union Street, Mishawaka, Indiana

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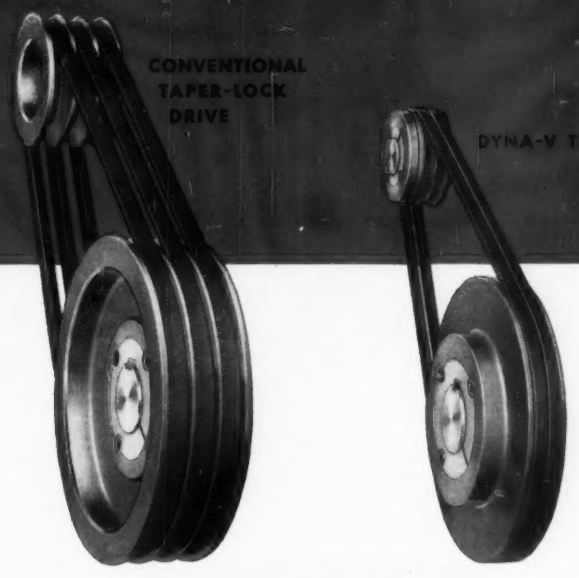
DODGE Dyna V



Dyna-V Drives for capacities up to 50 horsepower are now available from stock, using the new belt cross section, "3V," and Dyna-V Taper-Lock Sheaves to match.

Dyna-V Drives for capacities up to 200 horsepower, using "5V" belts and sheaves will be available from stock in March. Larger sizes up to 1500 hp, with "8V" belts and sheaves, can be furnished on order.

COMPARISON, ILLUSTRATED ABOVE — 3 HP, 1750 RPM, 2.41 TO 1 RATIO

	BELTS		SHEAVES			CENTER DIS-TANCE	HP	WEIGHT (LBS.)	COST	
	Number	Size*	O.D. Driver	O.D. Driven	Width				Per hp	Per Drive
CONVENTIONAL TAPER-LOCK DRIVE	3	A42S*	4.15"	8.95"	2½"*	12.3"	4.62	24.7	$5.91	$27.38
DYNA-V TAPER-LOCK DRIVE	2	3V400	3.35"	8.00"	1$\frac{3}{32}$"	10.8"	5.0	18.0	$4.50	$22.50
% SAVING *Savings vary with different sized drives*			19%	10%	56%	12%	+	27%	23.8%	17.8%

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

For more data, circle 288 on Reader Service Card

THE BIGGEST SAVING BIG CHEVIES YET!

Here's evidence that the big new haulers of Chevrolet's Task-Force 59 bring you more to work and save with than ever before; proof that they've got more of what it takes to cut your costs and keep you going on runs that call for the best performance a truck can put out!

ALL-NEW WORKMASTER SPECIAL V8—boosts performance with 348-cu.-in. displacement, 185 h.p. Optional* on Series 70 and 80 models.

DURABLE WORKMASTER V8 ENGINE—features heavy-duty pistons, Moraine "400" extreme-duty bearings, induction hardened crankshaft for extra durability. Standard in Series 90 and 100; 230 h.p.

TOUGH '59 HEAVY-DUTY TASKMASTER V8— teams compactness with short-stroke efficiency. Standard in Series 50, 50H; optional* in 60, 60H; 160 h.p.

TWO GREAT TRIPLE TORQUE TANDEMS—come equipped with rugged components that boost G.V.W.'s as high as 36,000 lbs. Durable, yet light in weight for bigger payloads.

NEW 50H AND 60H MODELS—biggest savers of all big trucks with G.V.W.'s up to 21,000 lbs. handle heavy-duty hauls that usually require bigger, more costly trucks.

NEW L.C.F.'s WITH SPECIAL ADVANTAGES! Compact (89¼", bumper to back of cab) models pull 35-ft. trailers yet keep over-all length to 45 ft.

NEW MIGHT FOR EVERY BIG TONNAGE HAUL! New close-ratio 5-speed transmissions* team with 2-speed rear axles* for top performance. Your Chevrolet dealer can show you these and other money-saving components in Task-Force 59 trucks. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Extra-cost options*

CHEVROLET

CHEVROLET TASK·FORCE 59 TRUCKS

For more data, circle 289 on Reader Service Card

Liquid Pepper

Production of a homogeneous, anhydrous pepper solution is the subject of a recent patent. Product is made by adding to and mixing with an oleo-resin of pepper, an acetate providing compound, an anhydrous organic acid and alcohol, then adjusting relative amounts of alcohol, acid and acetate compound to provide final concentration of not more than 15% acid.—U. S. Patent 2,860,054, Nov. 11, 1958.

Protecting Nut Meats

Roasting and coating nuts with sorbitol to render them highly resistant to browning and to development of undesirable flavors and odors is the subject of a recent patent.

In the process, nuts are introduced into molten sorbitol and held at 200-400F. to effect a roasting by heat transfer and, at the same time, coat them with the product. When roasted, nuts are removed and drained.—U. S. Patent 2,859,121, Nov. 4, 1958.

Natural Food Bactericide

Vitamin K_5 (2-methyl-4-amino-l-naphthol hydrochloride) has been found effective in prolonging storage life of such foods as cheddar and cottage cheese, mushroom sauce, low-sugar jams, frankfurters and crab meat. With latter, however, extreme discoloration developed which prevents its use commercially.—*Food Tech.*, 501-4, Oct., 1958.

Characteristic Flavor Lacking In Cultured Mushrooms

Examination of 9 species of mushrooms grown in surface and submerged cultures, on media that could be formulated in the laboratory, indicated that none produced the characteristic mushroom flavor either during growth or after drying.

Because of the exacting nutritional requirements, cost of dry material was high (about $1.40/lb.). However, it seemed evident that edible materials of good food value could be produced by submerged culture of higher fungi.—*J. Sc. Food & Agr.*, 9(10), 644-9, 1958.

Ice Consumption Cut, Fish Quality Upped By Cold Air Circulation in Trawler Hold

Improvement in fish quality with big savings of ice used on a trawler are two benefits of a French process in which refrigerated air is forced into the hold. Ice must still be used in the bank at top of hold, but the cold air cuts melting by at least 60%.

Before applying the process, the hold must be insulated with 8-10 in. of cork or other suitable material. Hold is then divided into compartments both laterally and horizontally, with openings at top of each so the cooled air can pass readily from one to the other.

A powerful fan forces the refrigerated air through ducts to the space between outside of hold and walls of compartments. Then it moves through vents situated at top of each compartment and is forced to every part of the hold. Finally, the air leaves opposite side and returns to refrigerating plant.

Evaporators are situated directly behind the hold. They consist of a bank of grilled pipes set in cubic form. Entire plant, including ducts and double walls of hold are designed to be disassembled for cleaning between voyages.

Tests, in which thermometers were inserted in body of fish and their readings recorded daily during return trip from fishing grounds, showed temperature descending gradually to 28F., then slowly rising to 30F. during the 10-day journey.—*Fish & Wildlife Service*, Oct. 14, 1958.

Freeze Drying Speeded

Fresh, raw meats may be dried under vacuum, but quality of product will depend on the degree of vacuum.

At 3-30 mm. Hg meat shrinks, darkens, and rehydrates slowly. At lower pressures (preferably below 1.5 mm.) meat freezes during drying, and there is no shrinkage. Dried product is pale in color, very porous, rehydrates quickly, and when cooked resembles fresh cooked meat very closely. Vacuum freeze-drying, however, is expensive and slow. To freeze beef steaks ½-1 in. thick may take 15-72 hr.

During a recent study, unit was developed that will dry a 4-lb. round steak ¾ in. thick in about 4 hr. The meat, either raw or partly frozen, is placed between a pair of aluminum plates, each carrying aluminum spikes $\frac{5}{32}$ in. dia., spaced ½ in. apart. Heating and stripper plates for removal of the dried meat are also provided.

After freezing at −4 F., vacuum and heat are applied to dehydrate the meat.

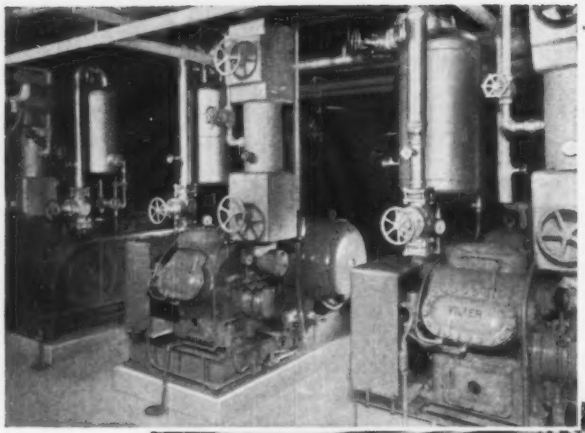
A pressure of 0.8-1.2 mm. Hg is used, and temperature at center rises to about 120 F. Holes formed by the spikes disappear when the meat is rehydrated and cooked. Both pork and beef (chops, and rib-eye steaks) dried in this way, compare very favorably with frozen meats after rehydration and cooking.—*J. Sc. Food & Agr.*, 9(9), 576-83, 1958.

Oil Impregnated Paper Controls Apple Scald

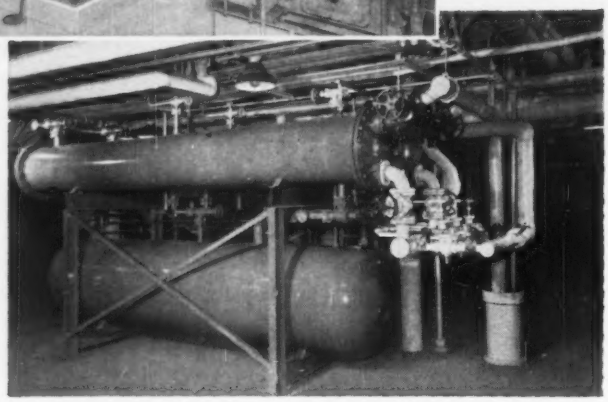
Superficial scald of apples is a surface disorder in which an external browning develops after several months of cool storage. It has been produced experimentally by exposing the fruit to vapors of ethyl acetate, amyl acetate, or ethyl butyrate.

Nineteen volatile products were introduced into the air of cabinets in which Granny Smith apples (from New South Wales, Australia) were stored. These included organic acids, esters, aldehydes and ketones, and hydrocarbons (ethylene and hexane).

At concentrations of 1 mol to 10,000 moles of air, only butyric and caproic acids, and butyl and hexyl acetates increased scald significantly when the apples were oil-wrapped. "Crude" hexane (90% boiling between 150 and 153F.) reduced incidence of scald, but purified hexane was not effective. Production of scald seems to be due to failure to remove volatiles from fruit, rather than to



The three Vilter ammonia VMC compressors supplied to the Sealtest Dairy include two 8-cylinder and one 6-cylinder unit.



Included in the Sealtest installation are two 8-pass 24" diameter x 16 ft. Vilter shell and tube condensers. A 42" diameter x 16 ft. receiver is beneath them.

New Sealtest Dairy Depends on VILTER Refrigeration

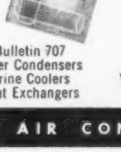
● The new Sealtest Dairy plant, Milwaukee, Wisconsin, processes the entire gamut of dairy products—milk, high protein milk, chocolate milk, buttermilk, cream, half and half, ice cream, and cottage cheese. To keep these products "Sealtest Fresh" during processing and storage Sealtest depends on Vilter VMC compressors and condensers for refrigeration.

From experience in other plants, Sealtest knows the VMC compressor delivers an excellent return for each refrigeration dollar invested. Here's why: The VMC's compact design insures more capacity in less space • maintenance costs are lower because VMC components are interchangeable, there's no extensive downtime ever • built-in capacity reduction permits automatic operation at reduced loads with consequent power savings • spring loaded safety heads offer protection against refrigerant slugs. These and other VMC features guarantee dependable Dairy refrigeration at low cost.

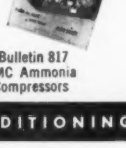
Call upon the Vilter Representative or Distributor nearest you for full details on Vilter Refrigeration Equipment for Dairies.

Sold by Vilter Distributor, Burge Ice Machine Co., Chicago, Illinois

For these helpful Bulletins write to The Vilter Manufacturing Company, Dept. E-802, 2217 S. First St., Milwaukee 7, Wisconsin



Bulletin 707
Vilter Condensers
Brine Coolers
Heat Exchangers



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Advances in Technology

absorption of them from the atmosphere, and the oil-impregnated wrap is more effective for this than good ventilation.—*J. Sc. Food & Agr.*, 9(10), 657-66, 1958.

Automatic Controls, Signals Speed Cheesemaking

A recent Swedish development for automatically controlling temperature and length of individual stages of curd treatment in cheese manufacture is said to save 6 working hours daily.

System consists essentially of a program regulator, magnetic steam valve, thermometer and signaling device, Regulator comprises a very slowly rotating cam with an irregular cut-in and rising circumference with several definite sections. Each section corresponds to a definite stage of the in-vat treatment of the curd—speed of cam rotation determines its duration, distance of periphery from center, the temperature.

A follower, in communication with the magnetic valve, sends impulses each time circumference of cam rises. Valve closes when required temperature is reached, impulse being passed by a thermometer attached to the stirrer. A bell rings if temperature exceeds required level and, also, when treatment is completed.

Here's an example of system's use in manufacture of Herrgärd cheese: After first draining of whey, main steam valve is opened manually. Exactly 30 min. after cutting coagulum magnetic valve opens. In approximately 20 min. required temperature of 100F. is reached and valve closes. After 15 min. stirring, valve opens again and within 15 min. temperature rises to 110F. and valve closes.

During subsequent 60 min. of final stirring valve was actuated twice, each time when temperature fell 1 deg. Curd treatment was finished 164 min. after cutting, and bell rang.—*Molkerei u. Käsereiztg* 9(28), 932, 1958. (*In German.*)

Enzyme Controls Color Of Fruit Juices

Partial removal of red and purple pigments from dark colored juices such as blackberry, black raspberry and grape is possible by use of the fungal enzyme anthocyanase. Jams and jellies made from the treated juices have greatly improved colors.

In the case of blackberry wine and grape juice, pigment deposits on

necks and bottoms of bottles that make the products unsalable, are eliminated by treating the juices. Enzyme is specific, acting only on the anthocyanin pigment, removes color in direct proportion to concentration of enzyme, and completes its function overnight.—*Food Tech.*, 517-19, Oct., 1958.

Canned Rye Bread

In-can baking of seeded rye bread comprising the steps of preparing dough, loading it into container, allowing to rise 10-15 min., partially sealing can, baking, hermetically sealing can (with or without vacuum), quickly cooling, is basis of recent patent.

Suggested dough formula: 92 lb. white rye flour, 64 lb. clear white flour, 83 lb. water, 6 lb. yeast, 6 lb. corn sugar, 8 lb. shortening, 3 lb. high acid milk powder, 1 lb. lactic acid, 1½ lb. salt, 12 oz. ground caraway seeds, 4 lb. whole seeds.—U. S. Patent 2,858,220, Oct. 28, 1958.

Synthetic Chocolate

Procedure for making a nutritional composition having the properties of chocolate is disclosed in a recent patent.

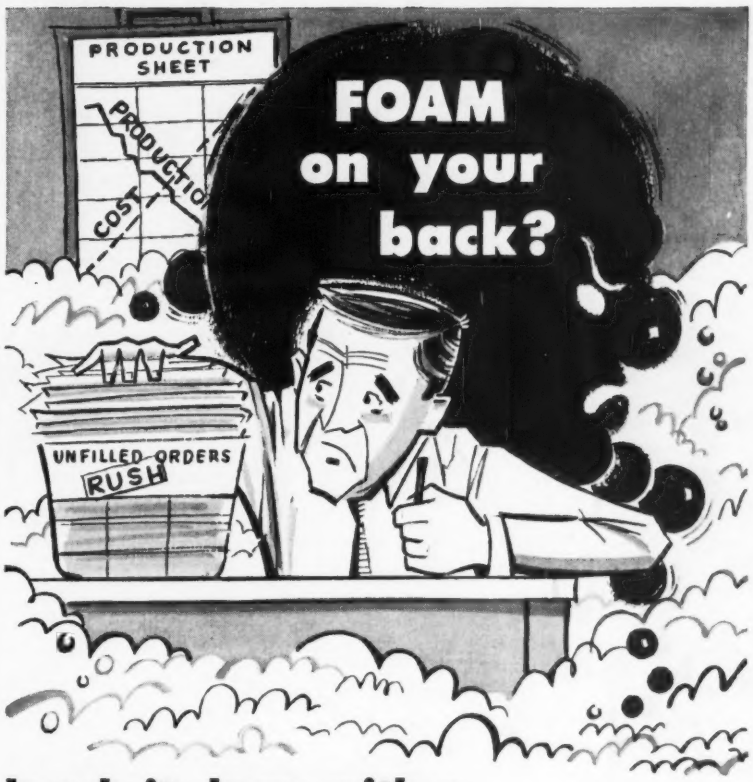
In practice of the invention sucrose, cocoa butter, milk, and cross-linked starch are homogenized. A second mixture is made of theobromine alkaloid, furfuryl alcohol, and casein hydrolysate containing peptides.

Both mixtures are then combined, homogenized, and heated until a rich brown color and flavor and aroma characteristic of chocolate are produced. When mass is cooled it hardens into a brittle cake.

In a variation of this procedure, lysine and methionine may be added to the first fraction. And the astringent quality of natural chocolate may be obtained by adding a small amount of phenol. Caffeine may also be substituted for theobromine.

Composition of product can be adjusted to meet a variety of specific purposes, such as an energy supplement for aviators or a cerebral vaso dilator to counteract vaso constriction resulting from sudden drops in elevation.

Product has been found to be non allergenic. It also has bacteriostatic properties, and when added to milk will keep the milk sweet for weeks.—U.S. Patent 2,816,834, Dec. 17, 1957.



knock it down with a Dow Corning SILICONE DEFOAMER!

If *foam* has you down (and your processing too), try a Dow Corning SILICONE DEFOAMER. Get this costly menace off *your* back for good.

Here are examples of how these versatile foam killers have killed foam and increased capacity in different production processes.

1 oz kills foam in:

120,000 lb citrus fruit coloring solution

62,500 lb soya oil-hexane mixture

11,033 lb cough syrup

FREE SAMPLE! Make your own test. Return coupon below for generous *trial sample* of a Dow Corning SILICONE DEFOAMER. No obligation, of course.

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TITLE

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My foamer is

Oil system

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Other

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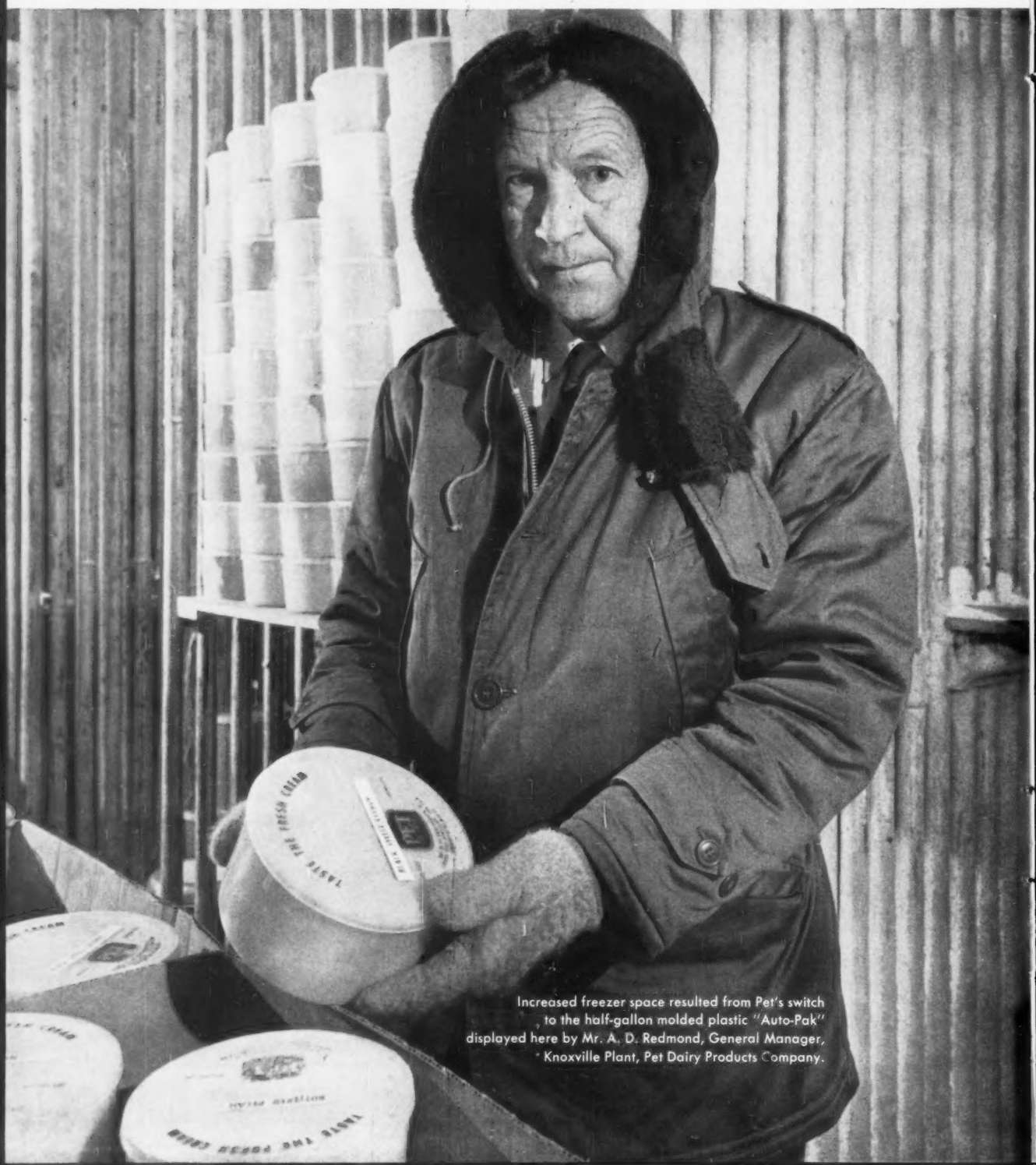
Pet Dairy Products to Plastic Container Corporation:

"Switching to your Auto-Pak containers hiked our ice cream sales 69%!"



Increased freezer space resulted from Pet's switch to the half-gallon molded plastic "Auto-Pak" displayed here by Mr. A. D. Redmond, General Manager, Knoxville Plant, Pet Dairy Products Company.

Mr. A. D. Redmond, General Manager, Knoxville Plant, Pet Dairy Products Company, reporting:

"This molded plastic package was our answer to price competition. Not only did we regain lost freezer space, but sales shot up 69% in the three-month period since we implemented this important decision.

"Our decision was based on the knowledge that appetizing food products (such as ice cream) will sell by impulse—if they can be seen. In other words, people like to see what they're buying—and while a dramatically lithographed label is surely appealing, our product, in a transparent package, sells even more effectively.

"But in addition to sales by 'sight,' the molded plastic package has a built-in convenience factor which consumers go for. Many ice cream packages leak, but our molded plastic package is absolutely leak proof. Consequently, the shopper never arrives home to find that melted ice cream has soaked her other packages—or herself, for that matter. This helps make our sales easier.

"Finally, there's the retailer. Our ice cream delivered in molded plastic packaging means a lot to this important element in our distribution because we supply packaging that better withstands the abuse ice cream gets in freezer space. The result is faster moving merchandise because it looks fresher, longer."

Which package will do the most powerful selling job for your product? From hardware to hamburgers, Monsanto can help assist you in determining whether molded plastic packaging can contribute to your sales and profit picture.

Write today for your free copy of the Molded Plastic Packaging Evaluator. There's no obligation, and the result may well result in increased sales.

Monsanto supplies a large variety of Lustrex® styrene molding compounds to America's leading molders of plastic packaging.

Monsanto

®LUSTREX: REG. U. S. PAT. OFF.

Another successful package is the decorated tumbler molded by Plastic Container Corporation, West Warren, Massachusetts. This package has re-use value for the consumer as a drinking tumbler.

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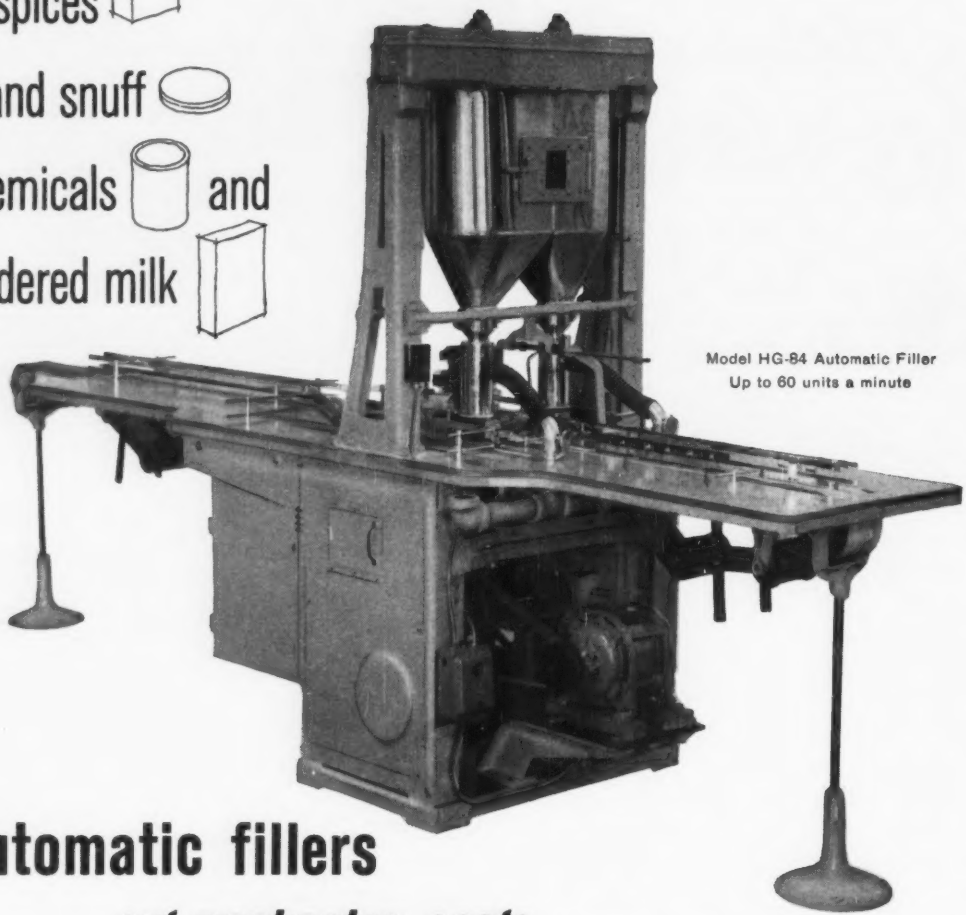
City _____ *State* _____

from spices and snuff to chemicals and powdered milk



Model HG-84 Automatic Filler
Up to 60 units a minute

S&S Automatic fillers

cut packaging costs of "hard-to-handle" products!

If your product is a sticky or dusty powder, hard-to-handle flakes or granules . . . if you package in cans, jars, boxes or cartons . . . if you want filling accuracy of plus or minus 1% for most products . . . then you can reduce your packaging costs with the versatile Stokes & Smith line of automatic high speed fillers.

Three different filling methods are available, depending on the characteristics of your product . . . volumetric set-time, gross weighing or combination auger-vacuum. Each method delivers accurate fill automatically through a controlled auger feed. Changeover from one product or package size to another is quick and simple. Container size ranges from 1½" to 6" wide, 1½" to 4" thick, 1½" to 8" high.

Multiple-station tandem fillers are also available for speeds of up to 145 units per minute. All models require only one attendant to feed.

A few of the many companies who have purchased S&S high speed automatic fillers

American Stores Company
Avon Products, Inc.
The Borden Company
Coty, Inc.
E. I. duPont
Durkee Famous Foods, Inc.
Albert Ehlers, Inc.
R. T. French, Inc.
The Fyr-Fyter Company
General Foods Corporation
Johnson & Johnson, Inc.
Lederle Laboratories Div.
J. Martinson & Company
Wm. Montgomery Company
Pet Milk Company
Rexall Drug Company
Stanley Home Products
U. S. Tobacco Company
White House Milk Company

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION ®

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
Stokes & Smith Plant
4914 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

MEN & COMPANIES

Harry A. Bullis

Resignation . . . Harry A. Bullis, 68, has submitted his resignation as board chairman of General Mills, Inc.

Pressed by GM's directors, he has already served 3 yr. beyond firm's normal retirement date, he points out.

Mr. Bullis' incredibly busy career includes a distinguished record of government service in many capacities.

In 1947, he was appointed as a member of President Truman's Citizens Food Committee.

And he has recently been named chairman of the International Development Advisory Board by President Eisenhower.

Beginning as a millhand with Washburn Crosby Co., predecessor of General Mills, in 1919, Mr. Bullis has served GM as secretary, comptroller, v.-p., exec. v.-p., president, and, since '48, chairman.

Giant Market . . . Is a dramatic new era at hand for dairy men?

A former dairy professor of U. of Calif., S. L. Denning, sees its advent in instant processes for dry milk products.

He has been elected exec. v.-p. and gen. mgr. of the newly-formed patent-licensing firm, Dairy Foods Inc., Oakland, Calif.

Parent companies, Carnation Co. and Foremost Dairies, Inc., have assigned to it all of their patents for instant-nonfat, -whole, -flavored, and related dry milk products.

Availability to most of free-world countries should give impetus to a giant market.

S. L. Denning

Annual production of dry milk products now runs over 1.6 billion lb., with sales over $300 million.

Much of it has not been "instantized." First big commercial push came with Carnation's introduction of instant nonfat milk. FE Oct. '54, p. 74).

George P. Butler has been named as general sales administrator of Pabst Brewing Co.'s new "streamlined" selling organization. In move to shorten communication lines between distribution and central sales, divisional offices have been abolished, and regional sales administrator posts doubled.

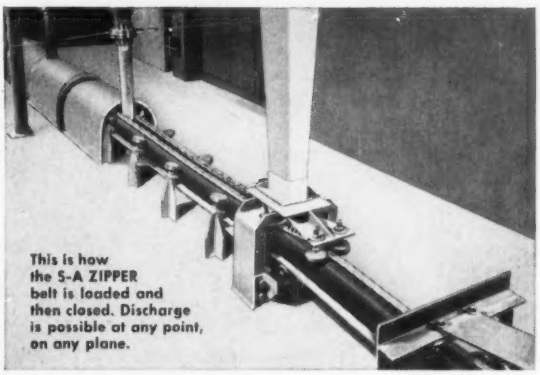
V.-P. Lawrence G. Butler has been upped to exec. v.-p. of Borden Foods Co.

John Holmes, 68, retires as chairman of Swift & Co. at firm's annual meeting this month, but will continue as a board member.

Roy G. Lucks, president of Calif. Packing Corp., has been elected a trustee of the Committee for Economic Development.

Col. John H. Rust, has retired as chief of veterinary pathology section of the Armed Forces Institute of Pathology, and joined staff of Mass. Institute of Technology. He will direct research on new and extended uses for radioisotopes in food fields. Project is sponsored by Atomic Energy Commission.

FRAGILE BULK MATERIALS ARE HANDLED GENTLY AND SAFELY by "ZIPPER" CLOSED-BELT CONVEYORS-ELEVATORS



This is how the S-A ZIPPER belt is loaded and then closed. Discharge is possible at any point, on any plane.

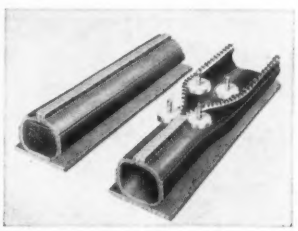
NO SEGREGATION — NO DEGRADATION OF MATERIALS

Bulk materials — granular, flaky, pulverized or small lump, can be conveyed or elevated in any plane, entirely enclosed and protected by S-A ZIPPER belt conveyors and elevators. The most delicate materials are moved swiftly and economically without degradation or separation. The ZIPPER conveyor is the only system which gently wraps its contents, moving them to a destination where the belt unwraps and gently deposits its contents.

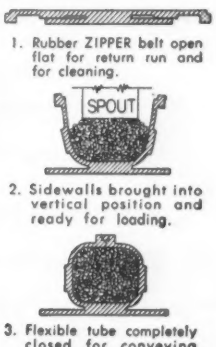
ZIPPER conveyors require no casings, will carry long distances in numerous flexible arrangements. The belt opens to receive material, zips closed sealing its load in a dust-tight casing which moves over a system of guide rollers and pulleys to discharge.

Exclusively an S-A product, the ZIPPER is ideal for products requiring gentle, clean handling.

For additional information write for Bulletin 349.



Section view thru endless ZIPPER belt shows how load is completely enclosed. Belt is spread, meshed and locked by rollers.



1. Rubber ZIPPER belt open flat for return run and for cleaning.

2. Sidewalls brought into vertical position and ready for loading.

3. Flexible tube completely closed for conveying and elevating.

The Big Name in Bulk Materials Handling

STEPHENS-ADAMSON MFG. CO.

6 RIDGEWAY AVE. AURORA, ILLINOIS

Plants located in: Los Angeles, Calif. • Clarksdale, Miss. • Belleville, Ont.

For more data, circle 294 on Reader Service Card

Virtually

UNLIMITED USE

in Processing Foods and Chemicals

The New

CogMill

is being used to process cheese, spices, dough, crackermeal, horseradish, peanuts, dehydrated beef, chicken bones and even metallic oxides.

CHOPS • GRINDS
GRANULATES • PULVERIZERS

almost any solid and blends liquids, or any combination of these materials, to

Any Desired Consistency

ALL **Product Contact Areas Stainless Steel**

Exclusive snap-apart design permits quick, thorough cleaning.

Models for manual or continuous feeding by 7½ to 20 H.P. motors. Variable speed feed screw with jacketed inlet and outlet for temperature controlled processing.

Send for details, designating product to be processed.

THE COG CORPORATION

Division of Motiograph, Inc. *Established 1896*

4390 W. Lake Street **Chicago 24, Illinois**

A. TORRES EXPORT, INC., 2550 W. Peterson Ave., Chicago 45, U.S.A.

"Sugar Lady" . . . Soon to retire, Mary F. Hughes has recently been honored by the Zerban Sugarmen.

Miss Hughes has been research director at Refined Syrups & Sugars, Inc., Yonkers, N. Y., for over 30 yr.

Says President F. A. Davidson: "Even before our firm was organized, Miss Hughes was working on the project which became the 'Open Sesame' to refining of liquid sugar, and so to our company's existence — development of vegetable carbon with Suchar Process Corp. in 1923."

Specially inscribed scroll

Mary F. Hughes

was presented by Dr. Henry B. Hass, president of Sugar Research Foundation, at a testimonial luncheon.

Industry

Carling Brewing Co., Cleveland, will purchase Heidelberg Brewing Co., Tacoma, Wash. Move sets up Carling as first eastern or midwestern brewer with its own production facilities in Pacific Northwest.

Nalley's, Inc., will construct $100,000 potato chip plant at Billings, Mont., said to be first in state. Firm also is building $300,000 plant in Portland, Ore., to replace Springfield, Ore., plant, which was destroyed by fire.

National Biscuit Co.'s new Fair Lawn, N. J., bakery is geared to annual production of $60 million worth of crackers and cookies. Recent opening marks giant step in firm's plant modernization. Since '45, Nabisco has spent more than $180 million on program.

National Pickle Packers Assn. has presented its '58 Hall of Fame Award to Homer W. Ohlhaver of White Cap Co., subsidiary of Continental Can Co., Inc., for "creative engineering."

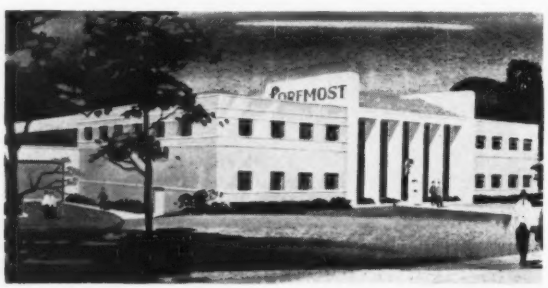
Star-Kist Foods, Inc., will locate $2.7 million tuna fish cannery on 3-acre site in Mayaguez, Puerto Rico.

Associated Industries

Baltimore & Ohio Railroad Co. has officially opened $5.5 million banana-discharging terminal in Baltimore Harbor. United Fruit Co.'s V.-P. J. Arthur Marquette threw switch at dedication ceremonies for this joint venture of railroad and his firm.

Continental Can Co.'s Carle C. Conway has resigned as a director and chairman of executive committee. His association with Continental has spanned almost entire life of firm.

NDA-Pawling Laboratories, a facility of Nuclear Development Corp. of America, now has in operation New York State's first privately-owned nuclear reactor. Among studies it may be used for are food storage quality (post-irradiation) and radiation chemistry of pure water.



Foremost Dairies, Inc.'s new $1.5 million plant in Dallas will feature one-floor operation with completely-automated equipment. Expected to be in operation by mid-'59, facilities are part of major construction and expansion program.

Food processors who demand uniformity in ingredients know...

Morton '999' salt is one ingredient that never varies in quality

Food processors, canners and packers everywhere are using Morton '999' because it is one ingredient you can *always* depend on for unvarying high quality. In fact, the constant quality of '999' Salt has become the standard of the food industry. With Morton '999' Salt, you insure a cleaner, more uniform flavor in processed foods.

Morton '999' is an economical premium-grade salt entirely free from bitter calcium and magnesium compounds that can distort flavor and downgrade product. Morton '999' is always 99.9% clean, pure sodium chloride, exceptionally low in the trace metals copper and iron.

'999' is available everywhere—accept no substitute

Morton '999' is the highest purity salt commercially available everywhere in the United States. '999' quality never varies from shipment to shipment, whether you buy it in bulk for direct salting, or in tablets made to your own specifications—either straight or blended with other flavoring agents. Send for complete information today!

Please send me more information about Morton '999' Salt

Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____

MORTON SALT COMPANY

INDUSTRIAL DIVISION

Dept. FE-159, 110 No. Wacker Drive, Chicago 6, Illinois

For New and Existing TRI-CLAMP Installations . . .

TRI-CLOVER now offers 5 Tri-Clamp types for permanent "CIP" and "Take-Down" lines

13 MHLA—Hinged Tri-Clamp—Adjustable. Assembly of joint utilizing this clamp is facilitated by hinge shown in close-up. Also note adjusting screw built into toggle locking device. Provides added assurance of positive leak-tight joint.

13MS—
Standard Tri-Clamp

13MSA—
Standard Tri-Clamp—Adjustable

13MHH—
Hinged Tri-Clamp—Heavy Duty

41UC—
Pressure Tri-Clamp—Adjustable

Six years ago, Tri-Clover Division introduced Tri-Clamp,® an entirely different concept of sanitary fitting design and fabrication. This new idea in sanitary piping offered quick, easy installation, longer fitting life and appreciable savings over conventional assemblies.

A continuing program of research and development has resulted in an expansion of this now popular line. Today, you can choose from five different Tri-Clamp types . . . for *all* your Permanent "CIP" and "Take-Down" sanitary lines. These new, improved Tri-Clamps are fabricated from Type 304 stainless steel and are available in 1", 1½", 2", 2½", 3" and 4" O.D. tube sizes. (1" ferrules and fittings utilize 1½" clamp assembly.)

A better-than-ever buy for new installations, the new designs are completely interchangeable with *any* Tri-Clamp now in service . . . regardless of age.

Like all Tri-Clover sanitary valves, fittings and pumps, Tri-Clamps are fabricated from highest quality materials by experienced craftsmen . . . to give you the ultimate in service. For the complete Tri-Clamp story, write for new Catalog 1-159.

See your nearest TRI-CLOVER DISTRIBUTOR

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

TRI-CLOVER

S-958

IN CANADA: Brantford, Ontario
EXPORT DEPT.: 8 South Michigan Ave.
Chicago 3, U.S.A.
Cable: TRICLO, Chicago

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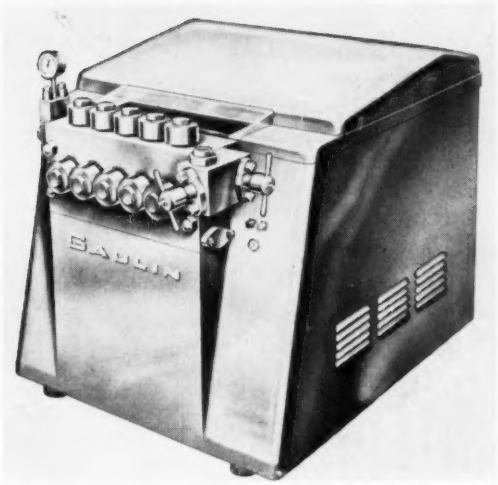
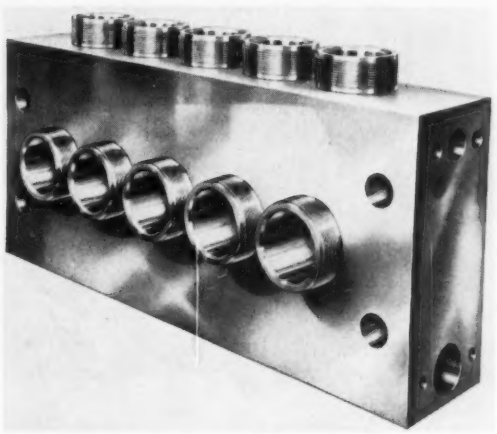
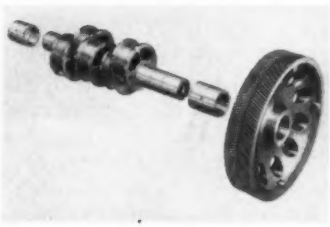
NEW EQUIPMENT & SUPPLIES



STREAMLINED homogenizer line offers maximum hydraulic and mechanical efficiency. All exposed and product-contact surface are of stainless steel. Capacities range 75-7,500 gph.



CYLINDER ASSEMBLY, with front and top cap studs and nuts eliminated, is specially designed for economical in-place cleaning.



ECCENTRIC SHAFT, of special high-alloy steel, has built-in dynamic balance. Bronze sleeve bearings are corrosion-proof.

New Homogenizer Design Ups Operating Efficiency

Major redesign of this homogenizer line offers greater operating efficiency and easier cleaning. Units employ high-pressure pumping action and are available in capacities ranging 75-7,500 gph.

In line with today's emphasis on maximum strength and minimum number of parts, all top and front cap studs and nuts have been removed from machine's cylinder assembly. Stainless-steel construction and absence of loose inserted sleeves particularly adapts this assembly for in-place cleaning. Moreover, it is engineered for low port velocities, which boosts hydraulic efficiency and particle-size uniformity.

The drive and transmission are designed for maximum mechanical efficiency, flexibility, and virtually trouble-free operation. A new ball-joint crosshead assembly provides precise alignment of connecting rods and cross heads. The eccentric shaft is of special high-alloy steel, and has built-in dynamic balance.

Unit's base and sub-base are enclosed in a heavy-gage stainless-steel (or carbon steel) skin, which eliminates 'overhang' of the cylinder. Cover, side, and the back panels (stainless steel) can be quickly re-

←For more data, Circle 297 on Reader Service Card

This is Why the Nash is the Most Simple Compressor

It's the Nash!

There are no mechanical complications in a Nash Compressor. A single moving element, a round rotor, with shrouded blades, forming a series of buckets, revolves freely in an elliptical casing containing any low viscosity liquid. This liquid, carried with the rotor, follows the elliptical contour of the casing.

The moving liquid therefore recedes from the rotor buckets at the wide part of the ellipse, permitting the buckets to fill with gas from the stationary Inlet Ports. As the casing narrows, the liquid is forced back into the rotor buckets, compressing the gas, and delivering it through the fixed Outlet Ports.

Nash Compressors produce 75 lbs pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure. Since compression is secured by an entirely different principle, gas pumping problems difficult with ordinary pumps are often handled easily in a Nash.

Nash simplicity means low maintenance cost, with original pump performance constant over long periods Data on these pumps sent immediately on request

No internal wearing parts.

No valves, pistons, or vanes.

No internal lubrication.

Low maintenance cost.

Saves floor space.

Desired delivery temperature automatically maintained.

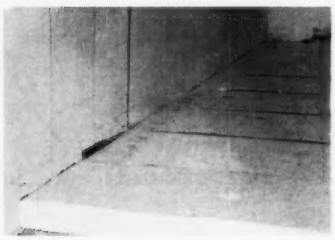
Slugs of liquid entering pump will do no harm.

75 pounds in a single stage.

NASH ENGINEERING COMPANY
313 WILSON, SO. NORWALK, CONN.

moved, making all parts easily accessible for maintenance.—*Manton-Gaulin Mfg. Co., 73 Garden St., Everett, Mass.*

Circle 16 on Reader Service Card



Lightweight Insulation Offers High Thermal Efficiency

By overcoming the two greatest problems in frozen-food transport—air infiltration and moisture accumulation—a new trailer-body insulation reportedly permits operation at nearly 100% thermal efficiency without sacrificing cargo space.

A foamed polystyrene called Armalite, it provides a unique sealed-envelope barrier that minimizes air and moisture transfer. In addition, it is extremely light. Shown above is the first course of insulation installed in a 35-ft ice cream trailer.

In performance tests, this unit was subjected to 110F. at 65% R.H. for 31 days in a controlled-atmosphere room, and weighed continuously on platform scales sensitive to 2 lb. Results showed a pick-up of only about 2.8 lb. of moisture per day, well under the usual moisture accumulation figure. Overall heat gain was just 39 Btu per hr. per deg F. Infiltration tests performed with an air-exhaust tester showed the body to be essentially tight at pressures likely to be encountered on the road.—*Armstrong Cork Co., Lancaster, Pa.*

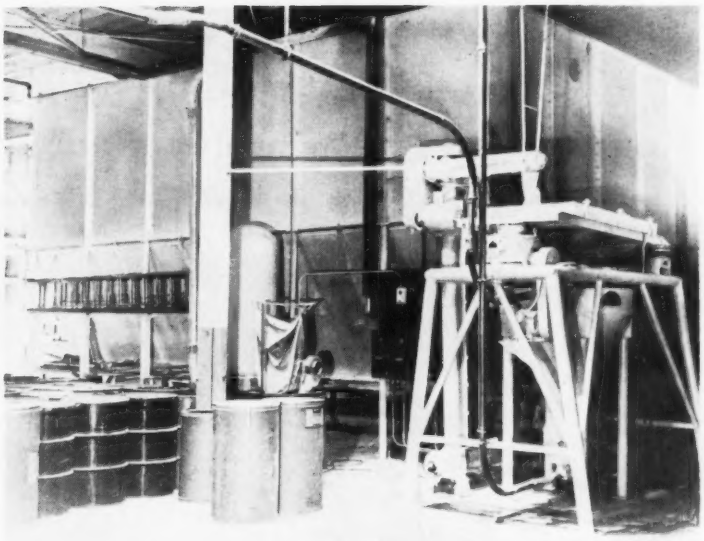
Circle 17 on Reader Service Card

New-Polymer-Base Packing Resists Heat, Corrosion

Superior resistance to heat and corrosion is reported for a new line of packings, gaskets, and seals.

Products are made of Viton, a broad-temperature-range polymer originally developed for aircraft and missile applications. For food industry use, they are available in an off-white formulation called Style 7623.—*Garlock Packing Co., Palmyra, N. Y.*

Circle 18 on Reader Service Card



Pneumatic System Delivers 200 Lb. of Flour Per Min.

Sanitary handling system takes flour from bulk-storage bins, sifts it and discharges directly to dough-mixer scale hoppers. Known as Airmatic, it uses low-volume air to move up to 200 lb. per min. through a 2-in. tube. System can be adapted to any plant without building alterations.—*Cleveland Automatic Machine Co., J. H. Day Div., 4924 Beech St., Cincinnati.*

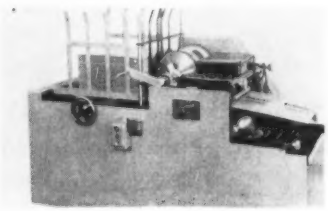
Circle 19 on Reader Service Card

Knock-Down Hoist Frame Is Easily Assembled

Equipped with a hoisting device, this knock-down frame offers easy load handling.

Mobile unit (Budgit Gantry "A"), available in 1- or 2-ton capacities, is easily assembled by two men in less than an hour. No special tools are required. The floor is the frame's track and because movement is not confined to overhead support or rails, frame can be used anywhere.—*Manning, Maxwell & Moore, Inc., Shaw-Box Crane & Hoist Div., Muskegon, Mich.*

Circle 20 on Reader Service Card



Prints Carton on 4 Sides At 3,500 Per Hr.

Stocking of pre-printed cartons may be eliminated with use of this in-plant press.

Operating on a 2-cylinder principle, unit (Box Printer) imprints all four sides of a corrugated carton in a single pass, delivering up to 3,500 containers per hr. Board of all standard weights and up to 50x65 in. (flat) can be handled. Quality print-

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign your name and address and mail. For more convenience, too, these items are listed and keyed in the Reader Service Section.

Look for these features on the finest freezer doors

. . . Jamison Vap-r-tyt® Lo-Temp Door has unmatched record of dependability and economy

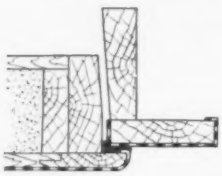
VAP-R-TYT METAL CLADDING

All metal seams locked and soldered

Penetrating bolt holes sealed

Prevents penetration of moisture under high vapor pressure

INFITTING DESIGN

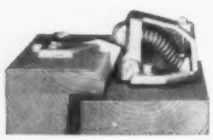


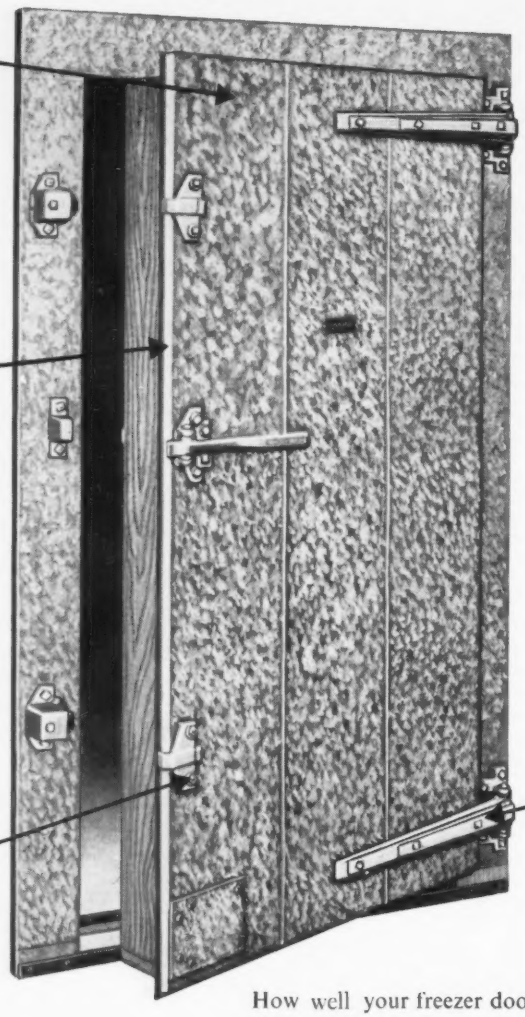
Requires less space than overlap type

Fits *into* wall

Requires shorter radius of swing

E-Z OPEN TWO-POINT FASTENER





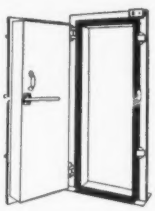
JAMISON FROSTOP® (optional)

Keeps doors from freezing shut

Safe temperature range eliminates dangers of overheating or condensation

Permits selection of any temperature between 60°F and 120°F

Carries Underwriters' Laboratories Inc. label



ADJUSTOFLEX HINGE

How well your freezer door performs depends on its basic design and construction. Jamison Lo-Temp Vap-r-tyt doors—proven through years of service in all types of installations—are today's economical answer to modern freezer operation. Write today for catalog Section 4 to Jamison Cold Storage Door Co., Hagerstown, Md.

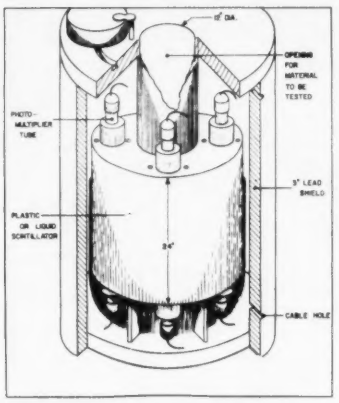
JAMISON

COLD STORAGE DOORS

ing is attained by use of special liquid inks in all colors, which dry instantly. Multi-color printing is possible in a single press pass.

Box dies, mounted on brass sheets, can be changed in 3 min., and movable type for codes and other variable information may be incorporated into a single press run.—*Algene Marketing Equipment, Inc., 232 Palisades Ave., Garfield, N. J.*

Circle 21 on Reader Service Card



Radiation Counter Gages Lean/Fat Ratio of Meat

Significant cost savings for meat processors through greater product uniformity are offered by a unit that measures the minute naturally occurring radiation in the lean.

Called Ratio Computer, unit is a scintillation counter which, combined with either a single- or multi-channel analyzer, identifies the radioactive isotope and gages its intensity. Lean meat contains radioactive potassium in fixed quantities, while there is none in fat and very little in bone. Thus, by measuring total potassium the fat-free mass can be determined.

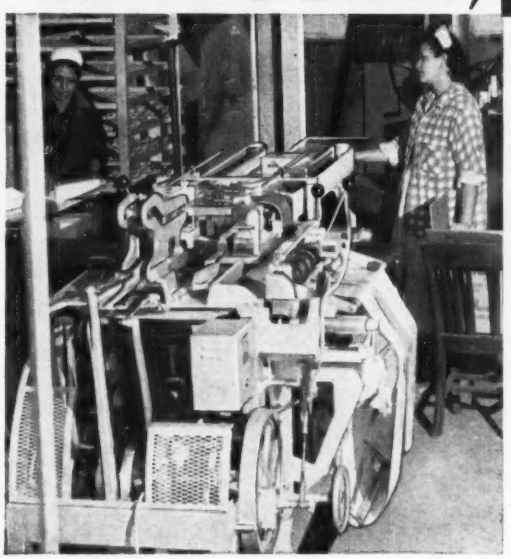
Instrument provides a continuous measurement when a stream of constant bulk-density is passed through counter. For a given sample size, response time varies inversely as the square of desired precision. Counting statistics become a limiting factor for greater than 2% accuracy.

System's response time is the interval required to replace contents of counter with fresh sample. Operating problems are considerably simpler when such determinations are made in batch processes, but the gain over routine chemical analysis is also much less.—*Radiation Counter Laboratories, Inc., Skokie, Ill.*

Circle 22 on Reader Service Card

"We are convinced no other wrapping machine could do as good a job as our new HAYSSEN",

says E. N. DUMAS, Daniel & Dumas Seafoods, Inc., Port Lavaca, Texas.



Daniel & Dumas, like so many other Seafood and Frozen Food packers, has learned from experience that Hayssen automatic wrapping means better product protection, increased sales appeal and packaging economy.

Small wonder that Hayssen is the overwhelming choice of Frozen Food processors. The Hayssen neatly and tightly overwraps any size or shape package in paper, film or foil, directly from roll stock, ready for shipment.

Compare these features: Lowest initial cost and maintenance record. Simplest to operate. All parts readily accessible for easier cleaning. Rust-resistant to meet damp packing room conditions. Ruggedly built for years of trouble-free packaging production. Let our experienced packaging engineers help you with your packaging problems. Contact us TODAY!

HAYSSEN
MANUFACTURING COMPANY
Dept. FE-1 • Sheboygan, Wis.
first in Automatic Packaging Since 1910
Atlanta • Chicago • Dallas • Denver • Detroit • Houston • Jackson, Miss. • Kansas City • Los Angeles
Minneapolis • New York • Philadelphia • St. Louis • San Francisco • Montreal • Toronto • Vancouver

For more data, circle 300 on Reader Service Card

IS Flavor Control YOUR PROBLEM?

Mono Sodium Glutamate, when used in the proper quantity, is the key to over-all control of the flavor variables involved in food processing.

Catching up with your competition, maintaining your position in today's competitive market, or leading the field, may depend on your decision to use MSG.

MSG blends, strengthens and preserves the natural fresh flavors of your product. It creates a uniformity of taste, a flavor identity which is the first step in establishing lasting consumer brand preference.

Great Western's MSG is available in bulk 100 lb. and 25 lb. drums.

THE SECRET OF GOOD TASTE ®

GREAT WESTERN

MSG

99+% Pure Mono Sodium Glutamate Crystals

THE GREAT WESTERN SUGAR COMPANY

Denver, Colorado

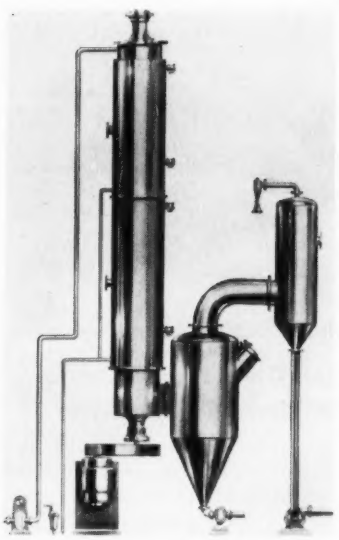
For more data, circle 301 on Reader Service Card

Display Stand Spurs Impulse Buying

By creating strong brand identity for the user, this corrugated display stand reportedly stimulates impulse buying.

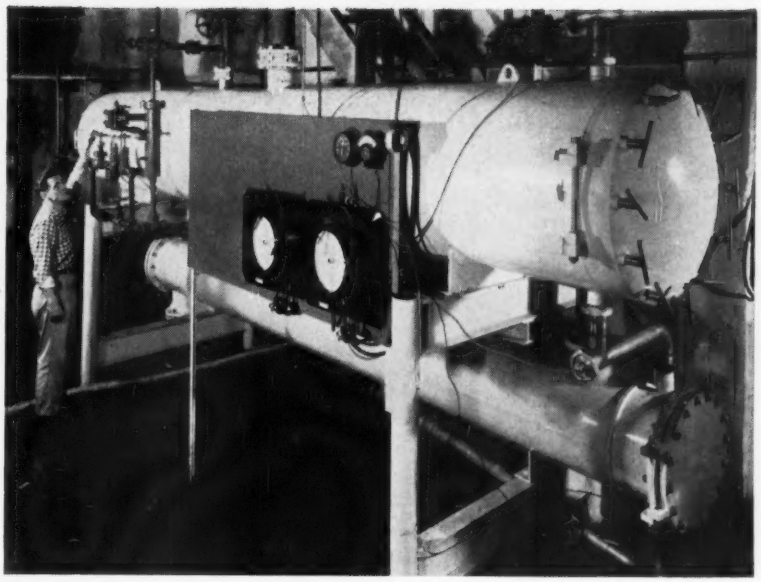
Attractively printed in maroon on white board, unit's overlapping top portion forms a bin that accommodates a large product supply. Brand name and brief selling message are featured on all sides of stand, which can be assembled in seconds.—*Hinde & Dauch, Sandusky, Ohio.*

Circle 23 on Reader Service Card



Turbulent-Film Evaporator Gives High Product Density

Designed for concentrating a wide range of viscous, foamy, or heat-sensitive materials, this agitated-film unit reportedly gives higher product densities that can be obtained in conventional tubular evaporators. And when used as a finisher, in conjunction with a single- or multiple-



Westfield Maid grape juice comes from a Pfaudler pasteurizer at 190°F, enters lower unit where it is cooled by water to 80°F. Upper unit cools juice to 30°-32°F with ammonia—just right for cold storage.

How to cool 100 gpm of grape juice all day, all night, with just 80 minutes out for cleaning

When Westfield Maid Cooperative used plate coolers to chill grape juice a lot of valuable production time went into manual cleaning.

Now, with the two Pfaudler shell and tube heat exchangers shown here, Westfield cleans just four times a 24-hour work day, taking twenty minutes per cleaning.

All cleaning is achieved with a heavy-duty detergent. No manual labor. No disassembling. Dependable. In fact, the only time the heat exchangers are opened is for visual inspection.

All temperatures are pre-set and automatically controlled. Hinged heads are highly polished to effect thorough cleaning and all connections are of sanitary design.

Send coupon for details of construction and available cooling areas.

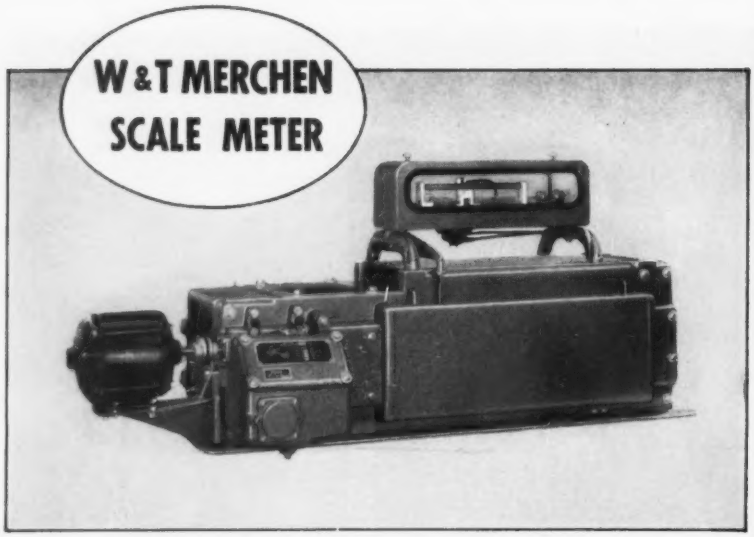
FOOD EQUIPMENT by 75 YEARS CREATING FOR TOMORROW Pfaudler

THE PFAUDLER CO.
a division of **PFAUDLER PERMUTIT INC.**
Dept. FE-19, ROCHESTER 3, NEW YORK

Please send bulletins on ☐ Glassed-Steel Storage Tanks; ☐ Heat Exchangers; ☐ Centrifuges; ☐ Dryer-Blenders; ☐ Rotary Piston and Gravity Fillers; ☐ Wiped-Film Evaporators.

Name.....
Title.....
Company.....
Street.....
City.....
Zone..... State.....

For more data, circle 302 on Reader Service Card



for Materials Accounting... Automatic Control

Accurate continuous weighing . . . that's the work for a W&T Merchen Scale Meter.

Here's why: It weighs by carrying free flowing solid materials on a continuous belt over a sensitive scale. Movements of the scale beam proportion a 3-15 p.s.i. air signal that can be recorded and used for control.

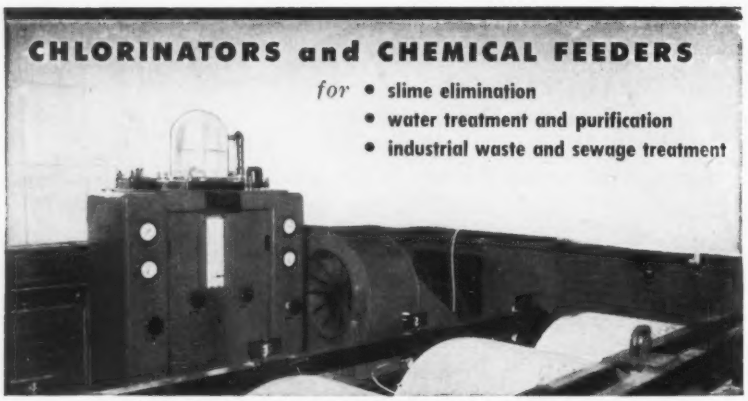
You can use the W&T Merchen Scale Meter to measure accurately the rate of flow and total material entering or leaving your process. You will have a precise minute to minute record from the pneumatic signal output.

And the same signal output can automatically control proportioning valves and ingredient feeders in your process.

Capacity: 3 to 3,000 lbs. per minute.
Accuracy: Recording of rate and total within ±1% of actual flow over a 10:1 range.

For complete information, write to Dept. M-39.37

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY


CHLORINATORS and CHEMICAL FEEDERS
for • slime elimination
• water treatment and purification
• industrial waste and sewage treatment

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

CD-41.37

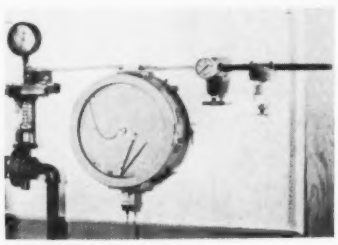
Equipment & Supplies

effect evaporator, it offers definite operating economies and production gains.

Known as Roto-Vak, machine's turbulent thin-film action and controlled contact time between product and heating medium provides high heat-transfer rates easily regulated for quality control. It employs "true down-flow" in which liquor and vapor pass vertically down a central vaporization tube and discharge into a highly efficient, readily cleanable centrifugal liquor-vapor separator. This eliminates entrainment rerun, reflux of product, and possibility of heat deterioration.

Temperatures formerly regarded as critical for heat-sensitive materials can now be utilized because of extremely short product-contact time. Vaporization tube is jacketed for either heating or cooling.

In operation, a spinning rotor agitates the thin liquid film to prevent burn-on. Blades wipe close to tube wall throughout entire length of rotor. If required, entire rotor assembly can be removed from either end of vaporization section, but clean-in-place fittings are available for washdown without disassembly. *—Buflovak Equipment Div., Blaw-Knox Co., P. O. Box 2041, Buffalo, N. Y.* **Circle 24 on Reader Service Card**

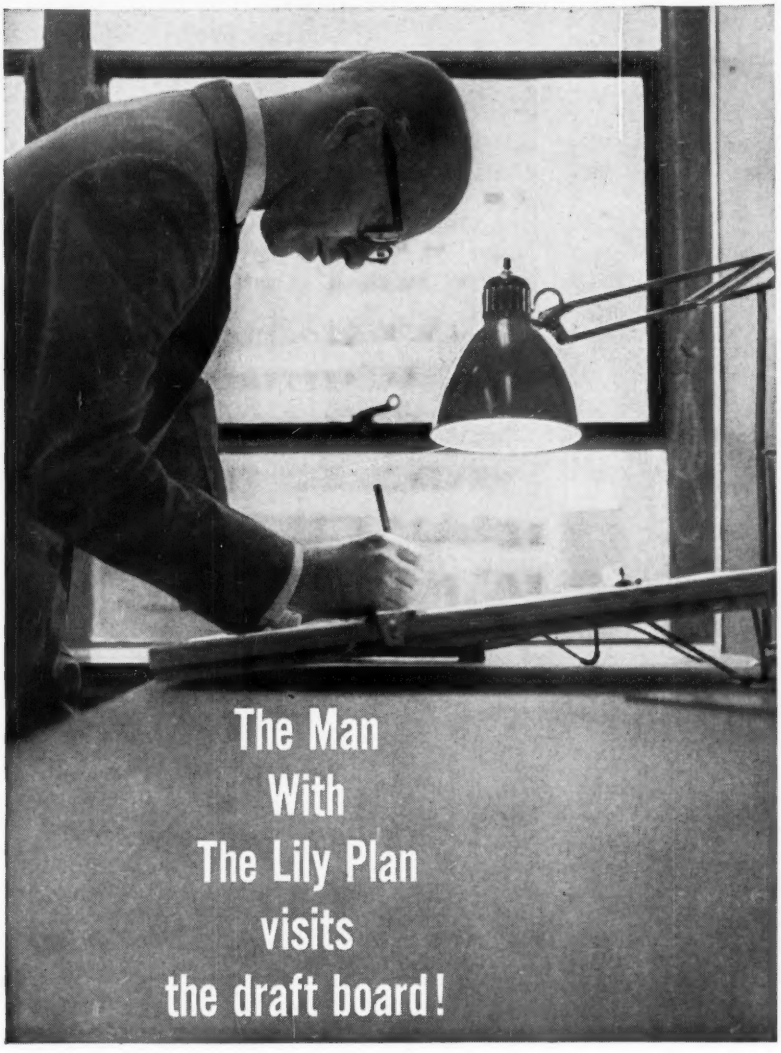


Unit Gives Precise Control Of Pre-Set Temperature

Accurate temperature regulation is offered by this pneumatic controller, which may be equipped with recording or indicating unit.

In operation, controls actuate air-operated devices, such as throttling valves, that control flow of steam, water, or gas. Since no electricity is used, they are explosion-proof. Units are available in ten optional temperature ranges from −30 to 1,100 F.

Illustrated recording control (Model RVA) has a 12-in. circular chart. Indicating model (IVA) has a wide, high-visibility scale that permits easy reading when instrument is



Result: Combination Nestrite containers to boost your sales... cut your operating costs 5 ways!

The Man With The Lily Plan has done it again! The double-wrapped, Nestrite* container — with matching HI-VI* Plastic Lids—not only steals the show in your display case, capturing more and more *impulse* sales, but also eliminates costly operations for you!

Here's how the consumer sees it: • Round shape of Nestrite connotes quality, looks larger! • HI-VI Plastic Lid permits visibility—puts freshness, goodness, appetite appeal of contents on display! • Container can be used for leftovers, other kitchen uses!

Here's what it does for you: • Each Nestrite holds a standard weight. Costly, time-consuming weighing, labeling and marking eliminated! • Tight-fitting HI-VI Overall and Snapover Plastic Lids make a neat, tight package. Heat-sealing unnecessary! • Fewer returns . . . rugged Nestrite construction withstands refrigeration and handling by customers! • Nestrite containers stack easier . . . nest, save costly storage space prior to use! • Establishes your brand! Your own design or trademark imprinted on container and lid. Colorful stock designs, too.

Lily* Nestrite (in 6, 8, 12 oz. and 1 and 2 lb. sizes) and Lily tubs with paper disc lids (2 lb. through 10 lb. sizes) are perfect for salads, side dishes, desserts, cube steaks, ground beef, stew meats, liver, oysters and many other items. Perhaps, if you are now packing some of these or would like some help in starting your own packaging operation, Lily can help with new container and selling ideas. For more information, just write *Lily-Tulip Cup Corporation, Dept. FE-19, 122 East 42nd Street, New York 17, New York.*

Lily cups

*T.M. Reg. U.S. Pat. Off.

Accurate, reliable temperature control need not be expensive

By John W. Ritter, Test Engineer
Sarco Company, Inc.

Temperature regulation equipment for food processing should be simple to use and easy to maintain. It should be absolutely reliable for the protection of the product—and inexpensive enough to use economically.

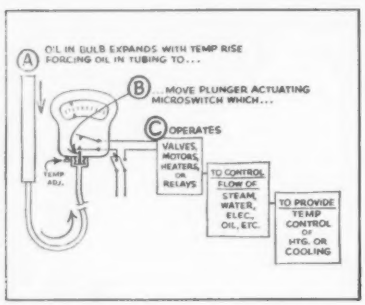
The satisfaction of these multiple demands is a matter of selecting controls that match the job, buying only the amount of control you need and no more.

A very good solution to this problem is the specification of a Sarco Electric Indicating Control. This type of control allows you a wide selection of ranges and adjustment within those ranges for your exact operating conditions.

The same unit can be used for controlling steam, water, or electricity and will regulate heating or cooling or both.

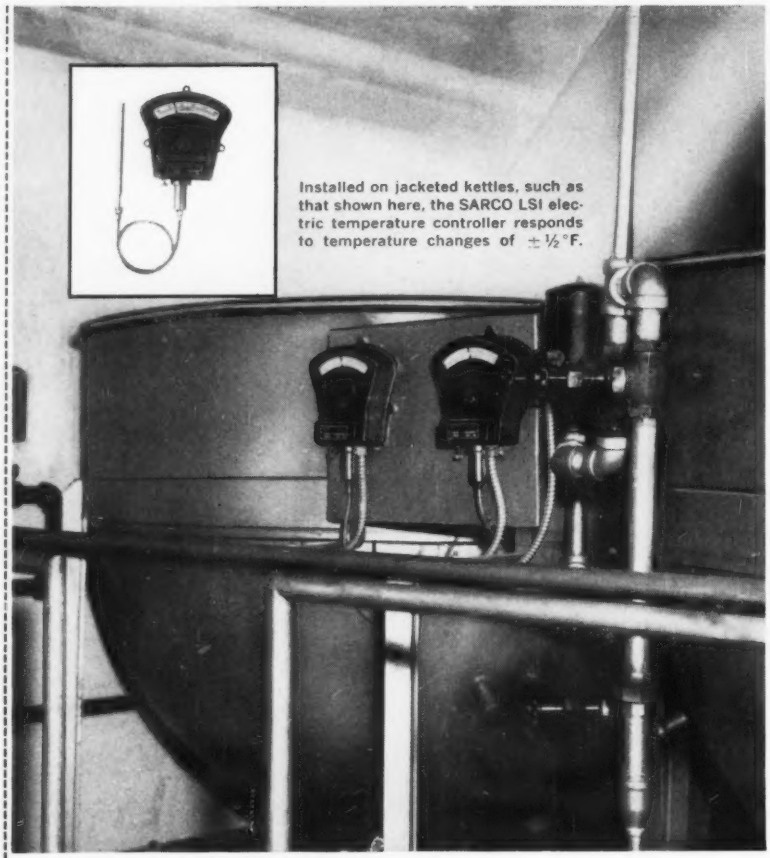
For additional flexibility in controlling heating or cooling, various interval timers and other control devices can be incorporated with Sarco Electric Indicating Temperature Regulators.

Sarco Electric Indicating Temperature Regulators include large easy-to-read dials with both actual and set temperatures on one scale, graduated in regular, even increments.


A
OIL IN BULB EXPANDS WITH TEMP RISE FORCING OIL IN TUBING TO...
B
...MOVE PLUNGER ACTUATING MICROSWITCH WHICH...
C
OPERATES
VALVES, MOTORS, HEATERS, OR RELAYS
TO CONTROL FLOW OF STEAM, WATER, ELEC., OIL, ETC.
TO PROVIDE TEMP CONTROL OF HTG. OR COOLING
TEMP ADJ.

This rough sketch shows how the Sarco LSI Electric Indicating Temperature Control can be used to actuate valves or relays, control flow or provide temperature control for heating or cooling.

In addition to simplicity and reliability, the Sarco control can be quite easily maintained by the regular maintenance crew, and its installation is a simple and inexpensive job.



Installed on jacketed kettles, such as that shown here, the SARCO LSI electric temperature controller responds to temperature changes of ±½°F.

You get the sensitivity you need—
in the range you need—with
reliable SARCO Electric Indicating Regulators

Sarco Electric Indicating Temperature Controllers are low in first cost, and they are inexpensive to install. They provide the sensitivity you need over the temperature range of *your* process. You get response to temperature changes of ±½°F. You change control settings simply by turning one knob. You get a continuous visual check on process temperature by reading both set and actual temperature on one large scale.

Sarco Electric Indicating Temperature Controllers are available for temperatures from 90°F. to 650°F., in operating ranges from 100°F. to 400°F. In addition, they offer many switch sequence combinations, such as step-heating, heating and cooling, and temperature control with the operation of visual or sound signaling devices.

Write today for our latest bulletin on Sarco Electric Indicating Controls. 6928-B

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

TEMPERATURE CONTROLLERS • STRAINERS • STEAM TRAPS • HEATING SPECIALTIES

installed some distance from control desk or work area. Both units offer an adjustable throttling range of 3-20%, and operate on 3-15 psi. air. —*Partlow Corp., New Hartford, N. Y.* Circle 25 on Reader Service Card

Rapidly Tests for Moisture With 0.1% Accuracy

Moisture content of a wide variety of materials may be determined rapidly, simply, and accurately with this unit.

Known as Model No. 600, the self-contained instrument has a magnetically damped analytical-type chain balance and an infra-red heating element. In operation, sample is placed on a disposable aluminum-foil pan, heated, and dried. Setting of a single dial permits direct reading of moisture contents any time during the adjustable pre-set cycle. The 650w. heater employed has infinite output control and its distance from sample may be adjusted from $\frac{1}{8}$-$1\frac{3}{4}$ in.

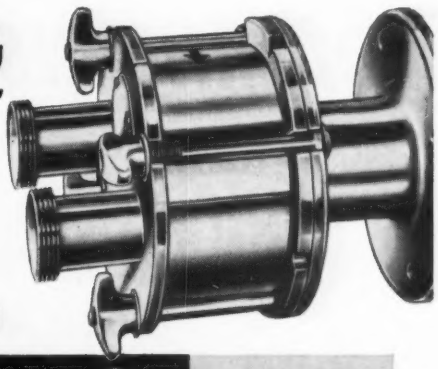
In addition to moisture determination, balance can be used for direct weighing up to 10 gm. with sensitivity of 10 mg.—*Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.*
Circle 26 on Reader Service Card

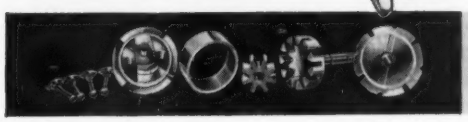
Paper-Type Strapping Offers 300-Lb. Tensile Strength

A flat paper strap, tough enough to substitute for more expensive materials in some applications, is available in 1,000- and 4,000-ft. spools. Widths range $\frac{1}{4}$-$\frac{3}{4}$ in. and product may be obtained in color or with special printing.

In fabrication, strips of 1-in.-wide kraft paper are twisted into parallel strands (about 20 per in.), which are then glued and laminated. For sealing, a 4-lb. strapping tool cinches,

VIKING
"Sanitor"
the **POSITIVE PUMP**
for easiest cleaning





SIMPLE TAKE DOWN OF "SANITOR" PUMP PARTS

The positive discharge and smooth, even flow of Viking "Sanitor" Pumps is only a part of the reason why Vikings will serve you best.

You can't beat "Sanitors" for easy disassembling, cleaning and re-assembling.

No tools are needed. You have no threads, deep O-ring grooves or splines in the pumping zone for hard cleaning.

Viking "Sanitor" Pumps meet all 3-A standards. No need to return "Sanitors" to factory for repairs.

It's the simple, sturdy, truly sanitary pump for milk and other food products.

For complete information, send today for catalog FE.

VIKING — The Leader not a follower in Rotary Pumps

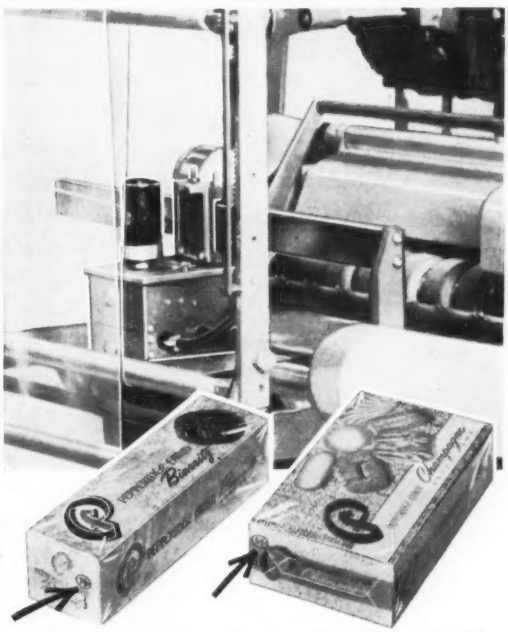
VIKING PUMP COMPANY
Cedar Falls, Iowa, U.S.A.; In Canada, it's "ROTO-KING" pumps.

Offices and Distributors in Principal Cities. See Your Classified Telephone Directory.

For more data, circle 306 on Reader Service Card

● **midget imprinter for wrapping machines***

New *Gottscho* "Series 700" **ROLAPRINTER**® Patented **attachment**



- **Occupies less than 1 cubic foot!**
- **Fully enclosed for instant-drying action!**

*Battle Creek, Campbell, Hayssen, Lynch, Package Machinery, Pak-Rapid, Roto-Wrap, Simplex, Wrap-Ade, Wrap-King and others

Write today for descriptive bulletin "RIN-7"

First and foremost in automatic production-line CODING, MARKING and IMPRINTING machines

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MODERNIZING?

Check FRICK Refrigeration FOR ALL YOUR NEEDS

- [V] CONDENSERS
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- [V] VALVES & FITTINGS
- [V] ICE RESERVE UNITS
- [V] AIR HANDLING UNITS
- [V] SHELL & TUBE COOLERS
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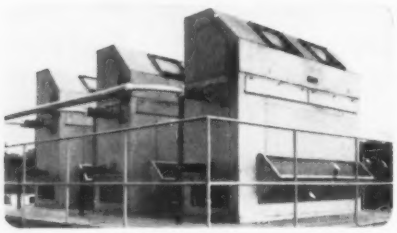
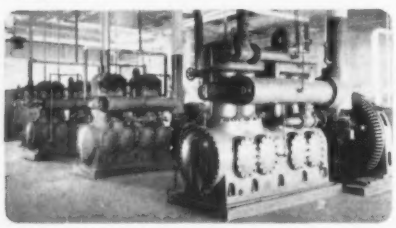
- [V] [V] COMPLETELY ENGINEERED SYSTEMS, DELIVERED AND INSTALLED



Frick Evaporative Condensers Save Up To 95% Of The Water Used.



Frick Heavy-Duty Four Cylinder Compressors Can Be Adapted to Handle Any Type of Refrigerant.

Frick Shell-Ice—Clear Solid Pieces of Curved Ice. Made Automatically, Without Snow or Waste.

It is a proven fact that today's semi- and full-automatic equipment soon saves enough to pay for itself.

Whatever the refrigeration requirements of your plant—quick freezing, ice making, cold storage, humidity control, low temperatures, condensing, air conditioning, or any process cooling . . . Frick engineers will help you modernize your present system or design one to meet your needs.

Frick refrigeration equipment is world renowned for a long trouble-free life of dependable operation. Many Frick compressors have been in operation for over 40 years.

CALL *your nearest Frick Branch of Distributor today. Or write direct to . . . . .*

DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA., U. S. A.

Equipment & Supplies

glues, and trims in one operation.

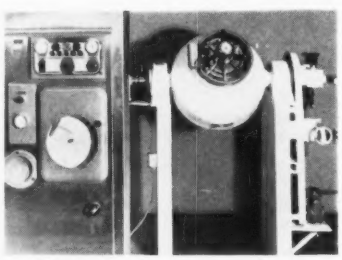
Strap has 300-lb. tensile strength, is light, easily cut, and does not rust or mar materials.—*Zellerbach Paper Co., 534 Battery, San Francisco.* Circle 27 on Reader Service Card

Belt Is Specially Treated To Resist Moisture

Offering three times the moisture resistance of belts used in canning, this unit is specially treated to protect its internal reinforcement from moisture-induced rot. A rubber coating between fabric plies offers additional protection against moisture and increases flexing life.

Called "Green Pack", belt is 'eye rest' green in color, which increases inspection-line efficiency. This color cannot wear off since it is dispersed throughout the rubber compound. Belts are molded against polished steel plates to provide extremely smooth surfaces for easier cleaning and reduced maintenance. They are available in any length, widths up to 48 in., with from 2 to 4 plies of fabric reinforcement. — *B. F. Goodrich Industrial Products Co., Akron, Ohio.*

Circle 28 on Reader Service Card



Drying, Blending, Sterilizing Performed in Single Unit

Designed for combination drying, blending, and sterilizing, this unit offers substantial savings in equipment investment, materials handling, processing time, and floor space.

Incorporated into the glassed-steel

Pro-80 Vital Gluten, new protein concentrate, will help your products move faster too

If you're considering a product improvement or a new product, you'd do well to investigate Pro-80 protein enrichment. Recognizing the increasing consumer preference for high protein foods, many successful food processors have turned to our Pro-80 Vital Gluten (80% pure wheat protein m.f.b.) to build greater food value into their products. They've been rewarded with additional volume. Possibly you will too.

Pro-80 adds food value to these and other foods

- *breads*
- *macaroni products*
- *cereals*
- *health foods*
- *puddings*
- *baby foods*

Pro-80, extracted from wheat, hydrates rapidly, blends smoothly, is bland and compatible—adds no taste or odor of its own. Write for more information regarding its many processing benefits.

SPECIAL COMMODITIES DIVISION

Minneapolis 26, Minnesota

General Mills

get more facts *fast*
SEND COUPON TODAY

Special Commodities Division
General Mills
Minneapolis 26, Minnesota

Yes, I'm interested in opportunities with Pro-80 in the following fields:____

Name____

Firm____

Address____

City____ Zone____

State____

For more data, circle 309 on Reader Service Card

Delectable pastry and doughnut fillings, jams and jellies are preserved in these pigmented epoxy-phenolic lined J&L pails at Henry & Henry, Inc., Buffalo, N.Y. Large openings and smooth interior walls assure sanitary conditions.

"Delicious flavors stay fresh twice as long in these J&L lined pails" ...reports Henry & Henry, Inc.

Doubled safe storage time. "Confidence in J&L five-gallon pails, lined with pigmented epoxy-phenolic, has enabled us to guarantee safe storage of baker's materials for twice the normal storage period," says L. J. Trum, of Henry & Henry, Inc., Buffalo, N.Y.

Packaging costs are lower. J&L recommended use of a single spray-coat lining instead of double-coat linings. J&L recommended use of lighter, 26-gauge steel containers.

Linings are flexible. These J&L linings will adhere to the pail walls without cracking, even if pails are severely dented during shipment. This is important when packaged foods have acidity ratings up to 4.3 pH.

J&L plants are strategically located. Nine J&L container plants provide prompt, round-the-corner service for food producers. Confidence of these producers in J&L resulted in over 2,500,000 J&L lined containers shipped last year.

You can obtain similar packaging protection and savings by discussing lining problems, *in confidence, of course*, with a J&L container specialist. Simply call or write Jones & Laughlin Container Division, 405 Lexington Ave., New York (YU 6-6600); or contact a J&L branch office at Atlanta; Bayonne, N.J.; Boston; Chicago; Cleveland; Kansas City, Kansas; Lancaster, Pa.; New Orleans; Philadelphia; Pittsburgh; Port Arthur; and Toledo.

Convenient five-gallon pail size permits bakers to store many flavors in a variety of products without spoilage. Pails are single-bead, open-head type with rubber-gasketed covers held on the top rolled-rim by ring seals.

The exciting new J&L

Jones & Laughlin Steel Corporation

CONTAINER DIVISION

405 LEXINGTON AVENUE, NEW YORK 17, NEW YORK

J&L STEEL

conical dryer-blender is an automatic gas sterilization system (Sterox-O-Matic). Operations can be accomplished separately or in any combination. Automatic controls monitor type of sterilizing cycle, temperature, and time. If sterilization is to be included within a specific cycle, pressure, vacuum, and humidity phases can also be automatically controlled.

Unit's controlled rotation promotes uniform mixing. Product is continuously deflected toward center of chamber, which exposes a constantly changing cross section to sterilizing medium and drying surfaces.—*Wilmot Castle Co., Rochester, N. Y.*

Circle 29 on Reader Service Card

INGREDIENTS

Cure's Synthetic Sweetener Ups Quality of Fried Bacon

Charring or burning of fried bacon and ham may be minimized when cured with a new formulation in which sugar is replaced with sodium cyclamate, a non-nutritive sweetener.

Since cure (Neverfail) contains no sugar, there is nothing to carmelize and no burnt residues sticking to pan. Product is available in standard and custom formulations for ham, pumped bacon, and dry or box-cured bacon. Tests indicate that use of synthetic sweetener in the cure intensifies the flavor.

Use of this product does not require any change in curing procedure. —*H. J. Mayer & Sons Co., 6811 S. Ashland Ave., Chicago.*

Circle 30 on Reader Service Card

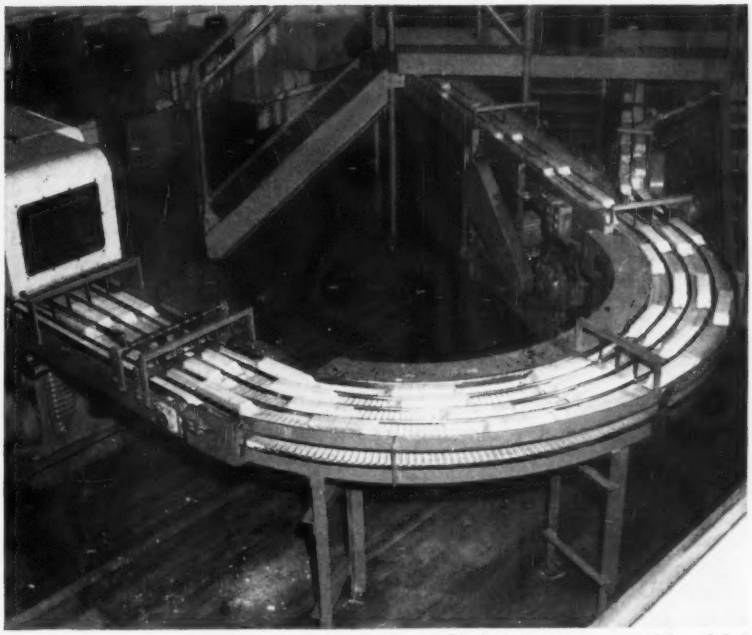
Torula Yeast Is Specific For Monosaccharides

An active yeast (*Torulopsis monosa*) that ferments monosaccharides to the exclusion of disaccharides is now available in experimental quantities as press-cake.

Known as Monodyne, it may be kept under refrigeration for 2-3 weeks without losing potency. Curbing the "browning reaction" in foods is seen as its major application. For example, in desurgaring of eggs for subsequent dehydration, 0.25-0.33% of yeast based on weight of liquid albumin is employed. A license to use this process may be obtained under public use patent No. 2,610,910. —*Red Star Yeast & Products Co., 221 E. Buffalo St., Milwaukee.*

Circle 31 on Reader Service Card

Industry Moves

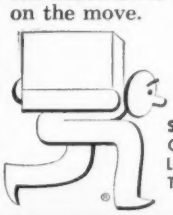


Crackers turn corners on an Ashworth Belt

on Metal Process Belts by ASHWORTH

Every industry has its product flow problem; frequently, it's one of "getting around a corner". Around the corner or straightline travel . . . whether it's crackers, popcorn, candy or nuts and bolts . . . there's an Ashworth Metal Process Belt to solve the problem.

Fabricated from any metal capable of being formed into wire, Ashworth belts provide a conveying medium permitting processing in transit through temperatures from −50° to 2100° F. Wherever your product must go—Ashworth Belts will help you effect economies and . . keep your product on the move.



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STEEL
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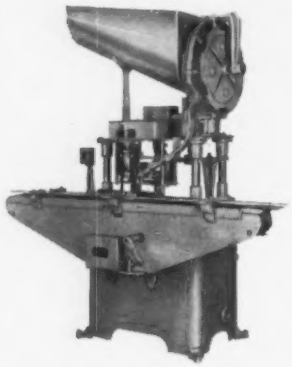
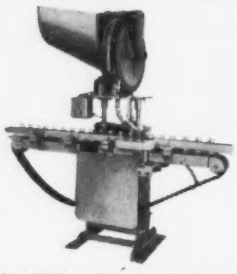
RESINA TOPS THEM ALL

fully automatic
SCREW CAPPER



The RESINA line of CAPPERS include models for sorting, feeding and applying a great variety of caps to bottles, jars or cans from ½ ounce to gallons. Speeds available up to 120 per minute.

fully automatic
FITMENT APPLICATOR



Automatically selects plastic fitments (solid or perforated) with or without lift tabs and orients them into a chute. Passing container picks up fitment which is then snapped on the container. Speeds available up to 120 per minute or higher.

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RESINA AUTOMATIC MACHINERY COMPANY, INC.
572 SMITH STREET • BROOKLYN 31, NEW YORK

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INCREASE VOLUME . . . DECREASE COST
with a YORK FOOD *Rotary Portion Former*

If your product must be FORMED in high volume at a minimum of cost . . . particularly if it is a POTATO or FISH item, investigate the advantages of the York Food ROTARY PORTION FORMER.

Used by many of the leading food processors and packers in the nation, the York Food ROTARY PORTION FORMER produces portions of extremely accurate weight, size and shape **without** extruding. Vacuum forming prevents damage to even the most delicate ingredients, as many large confectionery manufacturers have demonstrated by their use of the ROTARY PORTION FORMER.

Cost-cutting capacities available up to 2500 lbs. of material per hour; 1800 small pieces per minute.

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Equipment & Supplies

CHEMICALS

Pipe-Joint-Sealing Dope Available in Roll Form

Available in roll form for ease of handling, this pipe dope offers superior corrosion resistance and is unaffected by weathering or extended aging.

Called Ribbon Dope, it can be used at temperatures ranging —250 to 500F. It is available in 260- or 520-in. lengths, each roll packaged in a convenient dispenser box. A 260-in. roll makes up to 100 1-in. pipe joints.—*Permacel, New Brunswick, N. J.*

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BRIEFS

Overhead Cable Conveyors and work platforms change height while conveyor is in motion to speed truck unloading. Platform (Ride-A-Track) is raised to height of fully loaded truck, then is lowered during unloading. Cable system employs two flexible monorail sections that permit height adjustment of entire conveyor sections.—*Dearborn Fabricating & Engineering, 19440 Glendale, Detroit.* (33)

Semi-Automatic Horizontal Cartoner offers fast efficient packaging of bulky items such as baked goods. Unit (Model CMH) automatically feeds, opens, and seals 20-120 cartons per min., tuck or glued-end. It can also be adapted for thermosealing cold-wax frozen-food cartons.—*R. A. Jones & Co., P. O. Box 485, Cincinnati.* (34)

Checkweight Recorder graphs weight variations from norm on 6-in. strip chart. Instrument (Datamatic Jr.) can be suspended under package line or placed next to scale. Steel-case enclosure is 14x14x18 in.—*Scale Specialties & Systems Inc., 115 Harrison Ave., Roseland, N. J.* (35)

Sanitary Kettle Outlet Valve (flush type) with stainless-steel plug cuts through meat and vegetable cubes for positive sealing. "O" rings are replaceable and a cool-type handle acts as locking device to hold plug in open position. Available in 1½-, 2-, and 3-in. sizes, Types 304 or 306 stainless.—*Brighton Corp., Hamilton Kettles Div., 820 State Ave., Cincinnati.* (36)

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Photo courtesy of The UPJOHN Company

Now! Snail's pace to top speed...no jars, no jolts!

Entirely new! The only electric fork truck that provides smooth, "non-jerk" power-delivery under *all* working conditions.

On the all-new *Clarklift* Electric an infinitely variable speed control provides the *exact* torque necessary for different working conditions and assignments. On ramps, in congested areas, and particularly when inching or stacking . . . power is delivered with perfect regulation. Your driver has *complete* control of the travel speed of his truck at all times, resulting in greater efficiency and safety than ever before possible.

A new upright, one lever for both lift and tilt, self-adjusting brakes, unmatched accessibility are just some of the new features. There are many, many more. Send today for a brochure giving full details. Simply write: New Electrics, Clark Equipment Co., Battle Creek, Mich.

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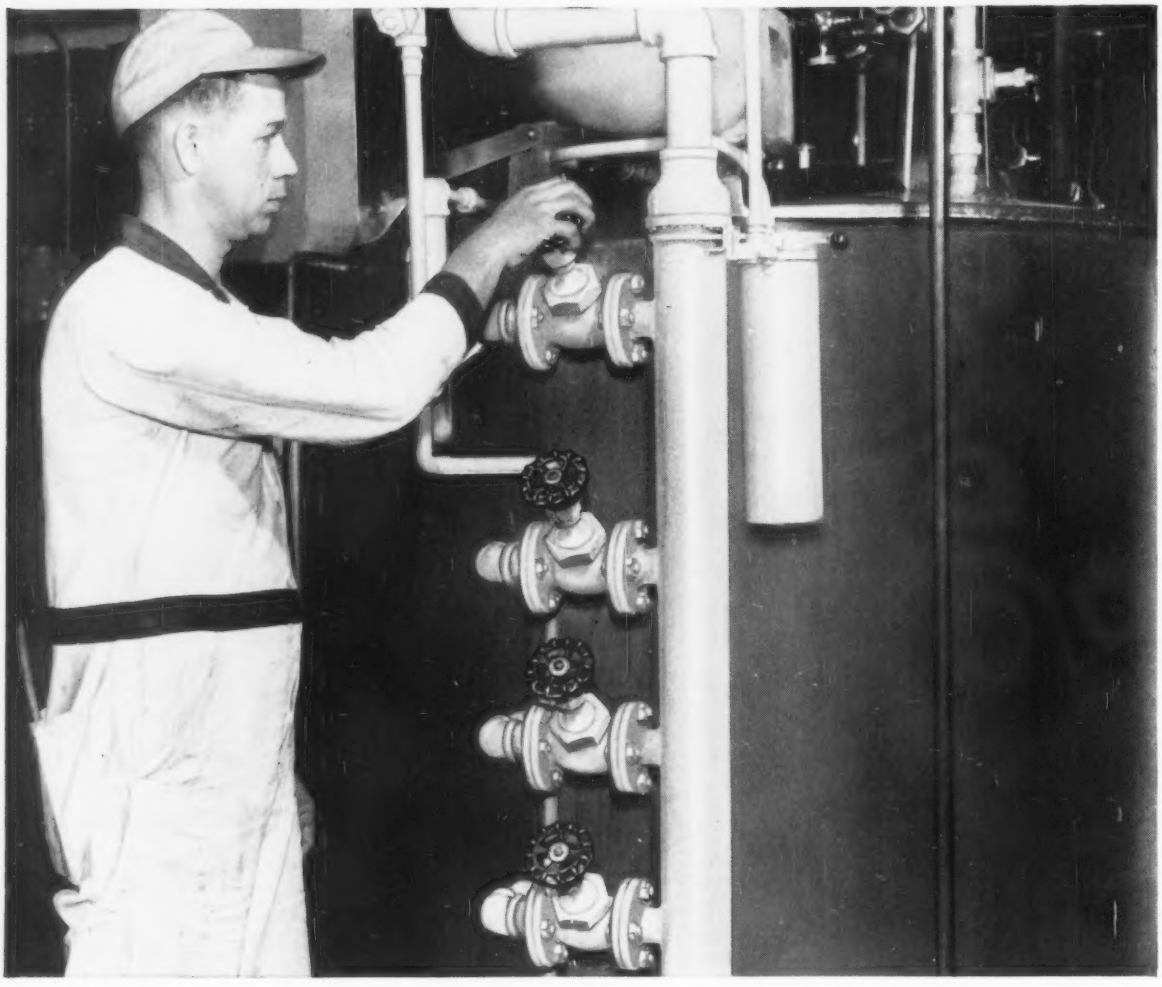
How Cincinnati Dairy Stops Valve Maintenance Problem



CRANE Valves End Excessive Shutdowns for Repairs

About every four months maintenance men of Sealtest, Central Division, Cincinnati, Ohio, had to replace worn, leaky discs and thread-stripped stems of valves used on the dairy's pasteurizing tanks.

The high cost of down time, labor and parts was only a part of this maintenance problem. Each time the valves had to be repaired, the dairy suffered a drop in production and faced the possible loss of 600 gallons of milk.

Upon recommendation, Crane No. 9 bronze globe valves, with quick-change composition disc, were installed. Today—two and one-half years later—these Crane valves, opened and closed a dozen times a day, have not cost the dairy one cent for repairs, or any loss in production or milk.

Here again is proof that Crane valve economy is never measurable in terms of first cost. You get it in years of maintenance-free service.

That's why more prudent buyers specify Crane valves for every service.

LEARN WHY Crane bronze valves with composition discs are so economical for service on steam, hot or cold water, oil or gas. Write to address below for Circular AD-2222.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

Only one salt dissolver delivers fully saturated brine at lowest cost

It's the Sterling Lixator—a fully automatic rock salt dissolver developed exclusively by International Salt Company for making 100% saturated brine from economical Sterling Rock Salt. The Lixator needs no maintenance. And it produces a rock salt brine so pure and clean that it can be used in numerous operations formerly thought to require evaporated salt. Here's why the Lixator is now being used in so many industrial plants . . .

Lixator has no moving parts—nothing to get out of order.

Downflow principle. After water is admitted into the Lixator, it flows *down* through the rock salt in the dissolving zone.

Brine is self-filtered for maximum purity. There is no sand or gravel filter bed to bother with. Instead, rock salt crystals in the lower portion of the Lixator completely filter the saturated brine.

Fully automatic. Whenever brine is drawn off, water is automatically admitted into the dissolving chamber to make more brine. Rock salt flows in from a Lixator hopper or down a chute from an overhead bin. The only requirement is to keep the storage section filled with Sterling Rock Salt.

Great flexibility. The Lixator can be placed anywhere in the plant, at a point most convenient for salt delivery. *Pipes* deliver brine to points of use.

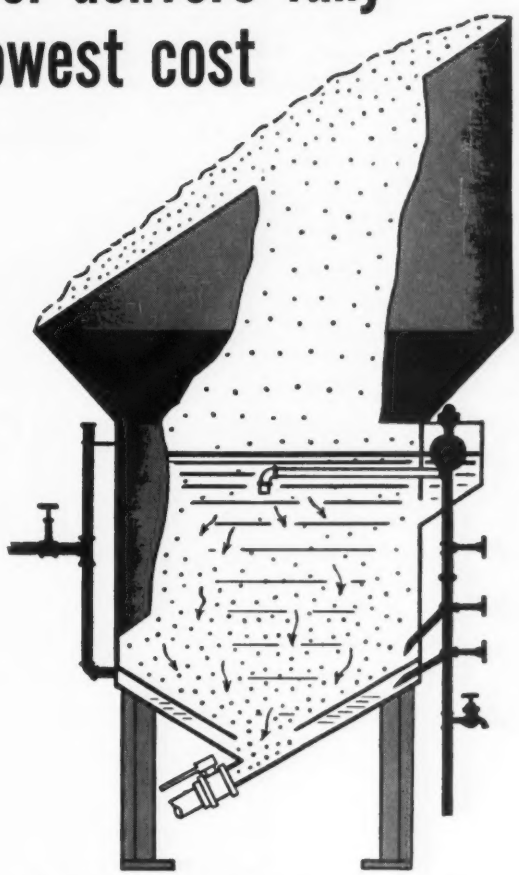
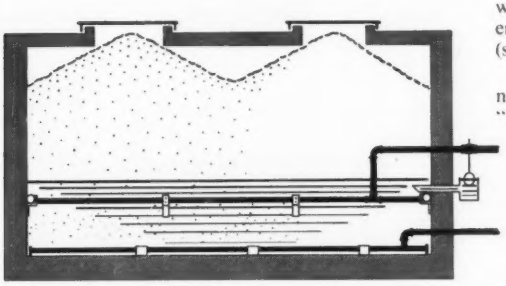


Diagram of Sterling Model Lixator. This is today's most widely used rock salt dissolver. It's available in many standard sizes—from 24″ to 120″ in diameter . . . with brine-making capacities up to 6,000 gallons per hour. Lixators come in enameled steel, Monel metal, or corrosion-proof plastic . . . with storage hoppers (standard low-lip, wall-type, cylindrical, corner, etc.) to suit any plant requirement.

For information on how your plant can save money with a Lixator, contact the nearest International Salt Company sales office. You can also get a free copy of "Brine for Today's Industry"—which fully describes the Lixate Process.



▲ **Diagram of Sterling Storage Lixator.** Designed for larger operations, the Storage Lixator is a combination salt storage, salt dissolving, and brine storage tank. On delivery, Sterling Rock Salt is unloaded directly into the Lixator. Lixate Brine is made automatically, as it is in every type of Lixator.

International Salt Company, Inc., Scranton 2, Pa. • Sales Offices:

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Service and research are the extras in

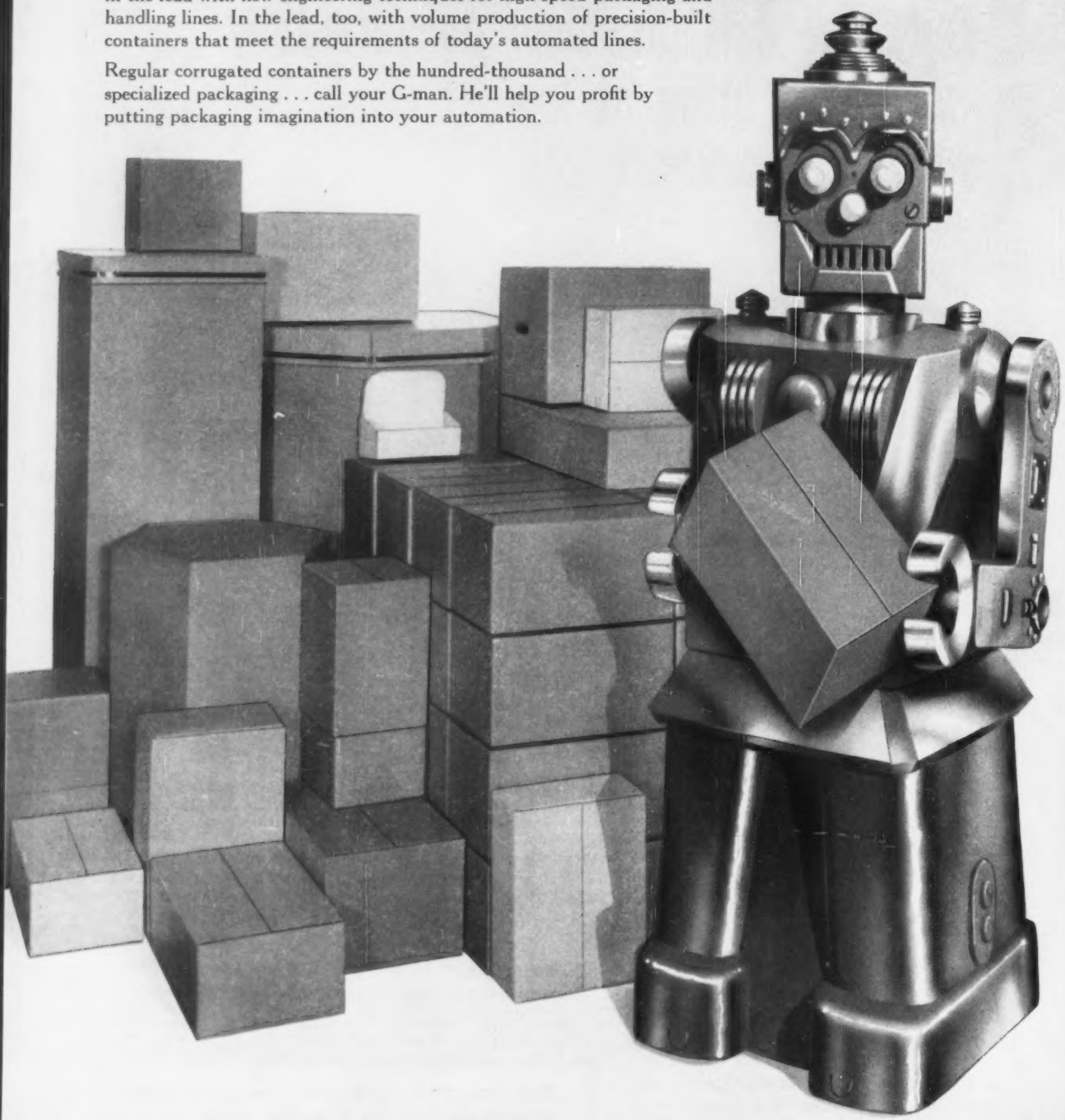
STERLING SALT

INTERNATIONAL SALT COMPANY, INC.

GAYLORD PUTS IMAGINATION INTO YOUR AUTOMATION

Not ready for robots? Fast-moving progress in automation can out-date your packaging operations in just a few years. That's why you'll find Gaylord in the lead with new engineering techniques for high-speed packaging and handling lines. In the lead, too, with volume production of precision-built containers that meet the requirements of today's automated lines.

Regular corrugated containers by the hundred-thousand . . . or specialized packaging . . . call your G-man. He'll help you profit by putting packaging imagination into your automation.



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CONTAINER CORPORATION

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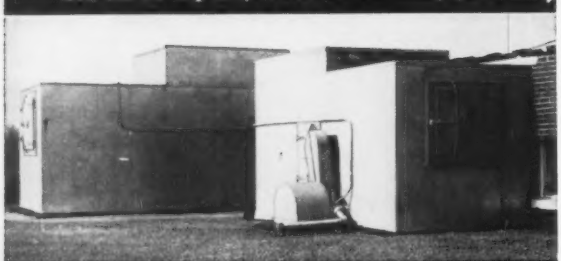
Borden PLANTS PROVE FLEXIBILITY OF KING SHARP FREEZE SYSTEMS

Many Borden Company plants throughout the nation have found that King Sharp Freeze Systems are adaptable to the particular needs of individual plants.

King Sharp Freeze units may be installed in the hardening space, just outside of it, above or below it. Below are two different applications which satisfied specific plant requirements.

The Cedar Rapids, Iowa plant expansion program included converting a second floor area to an additional hardening room with the King Sharp Freeze in the hardening space.



Borden's Mason City, Iowa plant achieved more efficient hardening and additional storage space with a roof installation of the King unit.

Write for detailed technical bulletin.

Manufacturers of

King COMPANY OF OWATONNA

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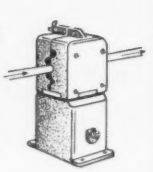
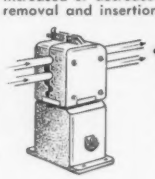
PUMPING IDEAS

POSSIBLE ONLY with a SIGMAMOTOR PUMP

MOVE CORROSIVE LIQUIDS

Material being pumped never comes in contact with pump mechanism. Wave-like motion of steel fingers forces material through Tygon tubing. By changing size of tubing, capacity can be increased or decreased. Pump housing opens for removal and insertion of tubing.



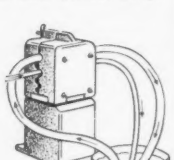


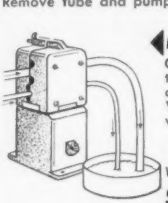
PUMP 2 OR 3 DIFFERENT LIQUIDS SIMULTANEOUSLY

Some models will accommodate up to four tubes so that four different liquids can be passed through the pump at one time without danger of contamination.

FEED AND MIX

One or more tubes can be feeding material to a mix while a larger tube is recirculating the liquid to produce agitation and thorough mixing. Viscous materials can be pumped without danger of gumming or plugging. Remove tube and pump is clean.





METER ADDITIVES

One or more additives can be pumped to a solution in the exact amount desired by selecting the correct size of tubing and regulating pump speed. Various controls can be incorporated to close valves ahead of pump.

Capacities from 0.5 cc. per min. to 4.5 G.P.M.

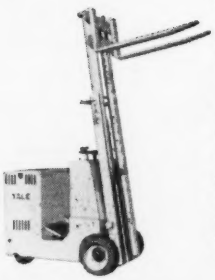
Write for complete information on sizes and capacities.

SIGMAMOTOR, INC.

22 N. Main Street • Middleport, N. Y.

A YALE PRODUCT FOR THE FOOD INDUSTRY

ONE YALE TRUCK DOES THREE JOBS ECONOMICALLY



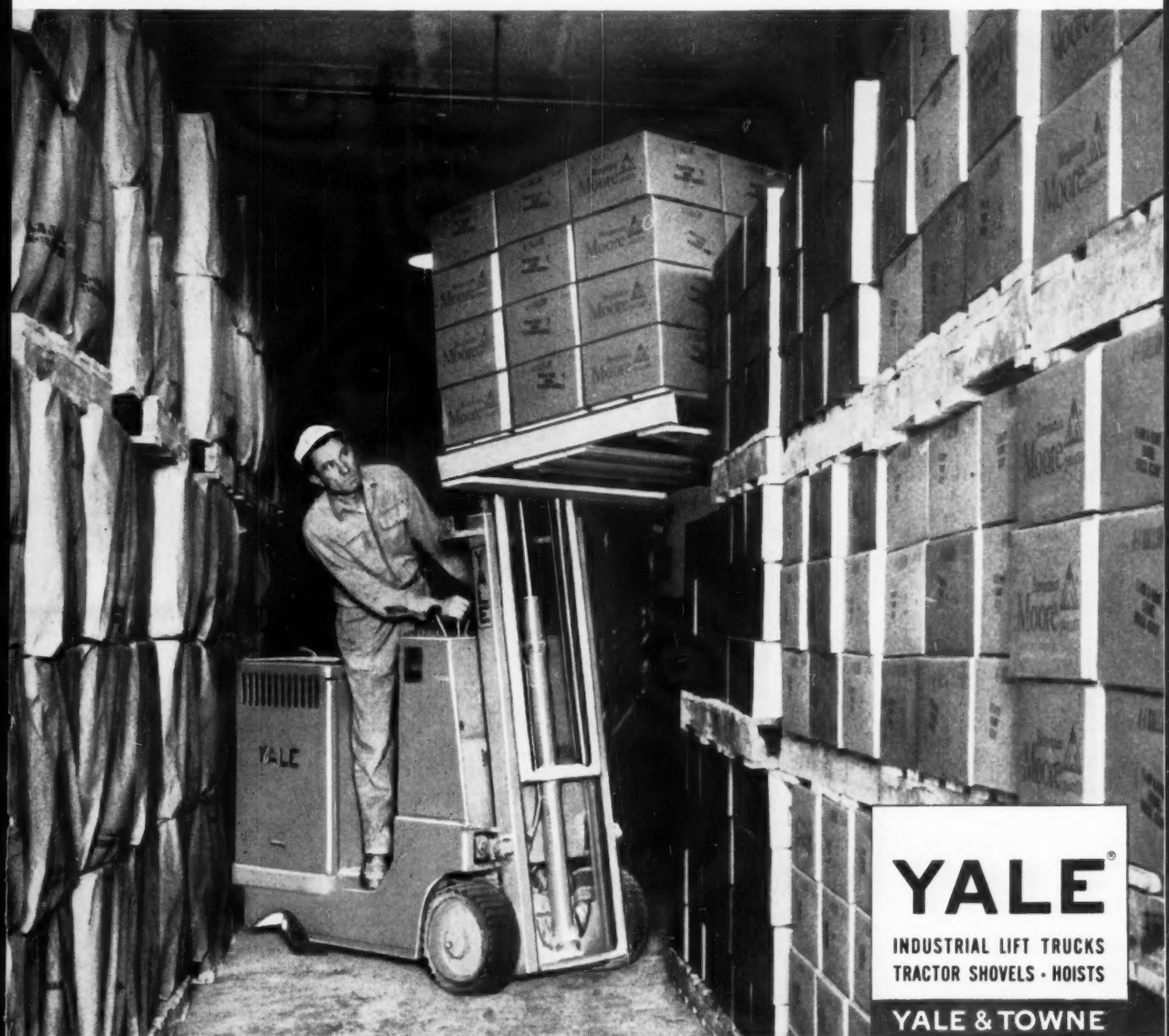
K-46 equally efficient in warehousing, on loading ramp, for mounting and dismounting operations

If your requirements call for a one-truck fleet, the versatile Yale K-46 is the truck for you!

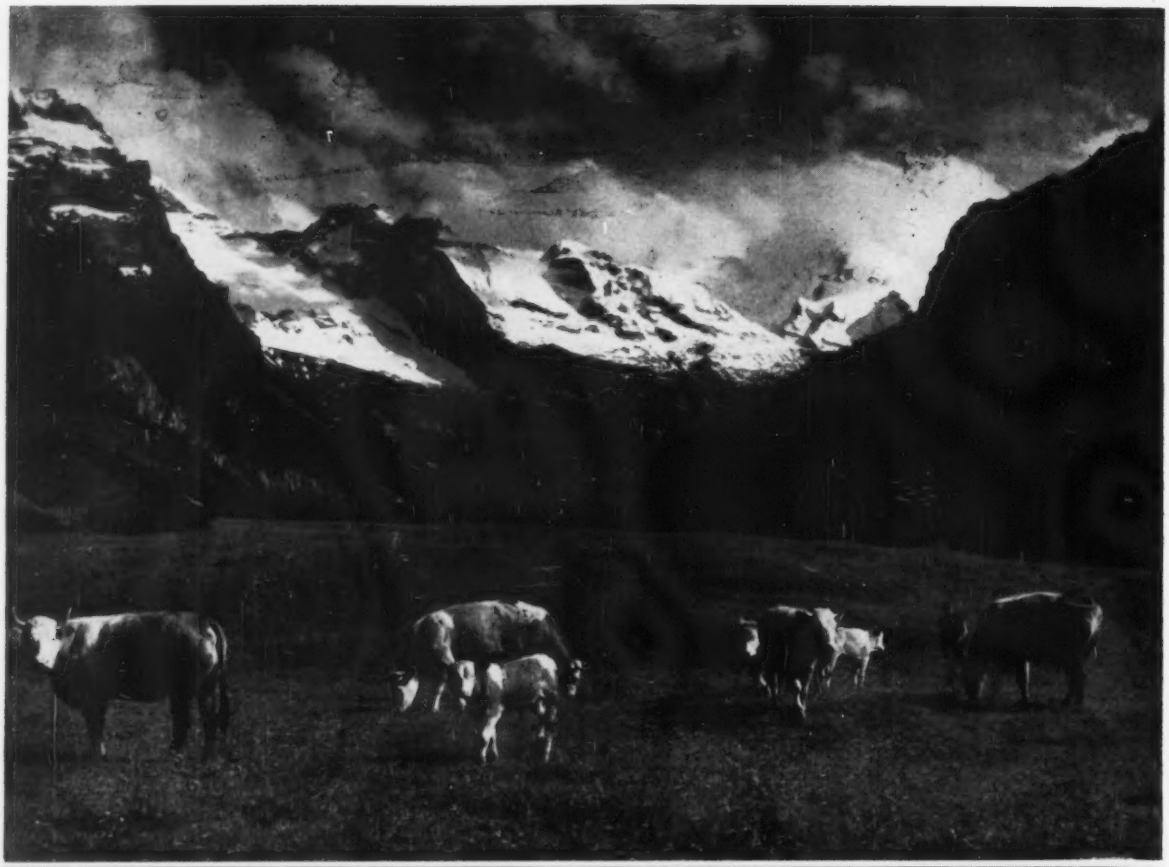
Three features give this economical Yale truck an extraordinary degree of usefulness. *Compactness* makes it a good narrow-aisle truck. *Maneuverability* makes it the perfect truck for loading and unloading on the delivery ramp. *Standup cockpit* permits easy, fast mounting and dismounting... gives the driver a clearer view for loading operations and aisle movement.

The K-46 is the ideal truck for profitable short cycle operations. Compact as it is, this economical truck has *all* the features of the large Yale electric trucks. Exclusive Magnetic Cam-O-Tactor for controlled acceleration and smooth travel—rugged durability—low-cost operation—dead-man control and other safety features. Capacities, 2,000 and 3,000 lbs.

For information about this stand-up electric truck, a cost-cutter in Yale's line of electric trucks (capacities 1,000 to 200,000 lbs.), call your Yale representative, or write for brochure #5112. The Yale & Towne Manufacturing Co., Yale Materials Handling Division, Philadelphia 15, Pennsylvania, Dept. KT1-V.



Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark.
Products: Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists



Something New in Flavors!

A "continental" touch—deliciously smooth—a richer, creamier flavor for fondant creams, caramels, toffees and chocolates. Our Flavor Laboratories are proud to offer manufacturing confectioners this unique new

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either in liquid or spray-dried form (Aromalok® Bavarian Cream Flavor). The latter imparts a palate-pleasing "sweet cream" effect to powdered cake, icing, pudding and ice cream mixes. Your requests for FREE testing samples of this exciting new flavor are cordially invited.

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USEFUL NEW BOOKS

Fight for Better Food

THE HEALTH OF A NATION *by Oscar E. Anderson, Jr. Published by University of Chicago Press, 5750 Ellis Ave., Chicago 37. 1958, 333 p. Price: $6.*

"The wine you drink never heard of a grape,
But of tannin and coal tar was made;
And you could not be certain, except for their shape,
That the eggs by a chicken were laid. . . ."

This humorous bit of doggerel was recited to the United States Congress in 1898 by a man who was in the midst of a 50 year fight for a federal food and drug monitoring law. It was not until 1906 that Harvey Wiley saw his dream come true with the enactment of the first FDA law.

This interesting and authoritative book details Wiley's fight against the unsanitary and criminal conditions which marked many food and drug processing operations at the turn of the century.

This book is a "must" for food men who recognize the need for knowing something of the past history of their industry.

$516,000,000 to Spend

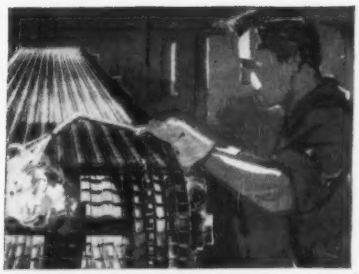
INCOME TRENDS IN THE UNITED STATES THROUGH 1975 *by Bonnar Brown & Janet Hansen Tate. Published by Stanford Research Institute, Menlo Park, Calif. 1958. Price: $2.00, 131 p.*

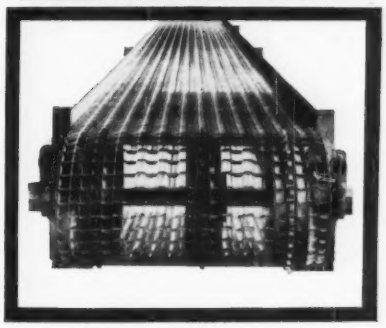
A consumer purchasing power of $516-million—that's the promising figure derived from Stanford Research Institute's newly published report.

Third in a series on general indicators of economic growth in the United States, report covers estimates of personal income, federal individual income taxes, and spendable income. The years 1960, 1965, 1970, and 1975 are treated under conditions of virtually full employment.

Geographically the estimates cover the Continental United States, nine areas into which the United States has been divided by the Bureau of the Census, and eleven western states.

Easily Sterilized While in Motion
by One Man
LA PORTE
FLEXIBLE STEEL CONVEYOR BELTING





The open mesh feature of the La Porte belting makes sterilizing simple and easy. One man can do the job with a steam gun in minutes, eliminating down time and extra labor costs.

In addition, it assures positive drive on the sprocket, and free circulation of air and liquids around products in process.

Made of galvanized steel of the best quality, La Porte belting is available in ½" x 1", or 1" x 1" in any length and practically any width.

LA PORTE

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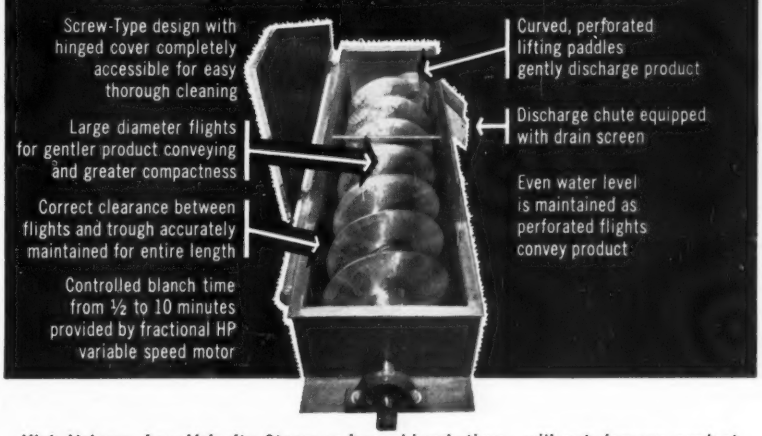
THERMASCREW WATER BLANCHER
designed specifically for medium and small processors


Screw-Type design with hinged cover completely accessible for easy thorough cleaning
Large diameter flights for gentler product conveying and greater compactness
Correct clearance between flights and trough accurately maintained for entire length
Controlled blanch time from ½ to 10 minutes provided by fractional HP variable speed motor
Curved, perforated lifting paddles gently discharge product
Discharge chute equipped with drain screen
Even water level is maintained as perforated flights convey product

High Volume, Low Velocity Steam reduces blanch time—will not damage product.
Positive Conveying Action assures uniform blanch.
Compact and Efficient Replacement for belt and reel blanchers.
Lower Installation and Operating Cost.

Rietz

For additional information, answers to specific questions, or laboratory testing of your product in this machine, write to Rietz.

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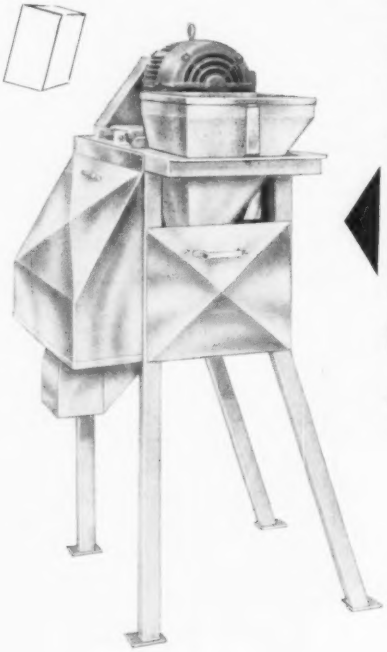
Versatility

is the big word for the Urschel Model **RA DICER, STRIP-CUTTER AND SLICER**

For Pickles, Vegetables, Fruits, Candied Fruits, Fruit Peel



The New Urschel Model **"RA" Dicer, Strip-Cutter and Slicer** gives you these *new* advantages: *widest range of cuts – from relish sizes of 1/16" x 1/8" x 1/8" to full 3/8" cubes, strip-cuts and slices ▶ more perfect dices than ever before ▶ operating speeds are quickly changed to provide the best dicing efficiency for various products and size cuts desired – means maximum capacity and higher quality cuts ▶ saves your valuable process syrups ▶ no product crushing – all the juice is locked in ▶ plugging is avoided by more direct product transfer from slicing to dicing knives ▶ stainless steel product contact surfaces ▶ one motor instead of two – mounted above operating parts for complete protection ▶ capacity up to 10,000 lbs. per hour*

The new "RA" Dicer replaces the model "R" unit in the Urschel line

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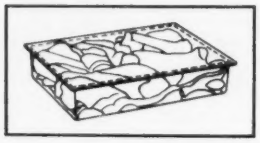

New Meat Package Solves Released-Fluid Problem

Moisture-resistant plastic tray, having holes in bottom corrugations, is filled with fluid-releasing meat. Sealed container is then stored in contact with liquid-absorbing material, which provides a fluid-free product of stable net weight.—*V. F. Maturi, East Meadow, and J. H. Droham, Huntington, N. Y., to American Cyanamid, N.Y.C.* No. 2,859,122.

PRODUCTS

Pressurized Food Dressing Comprising Emulsion of Fat Particles, Water-Soluble Protein-Containing Pasteurized Egg Yolk Material—Best Foods, Inc., N.Y.C. No. 2,844,470.

Sterilized Concentrated Milk Processed With Seaweed Extract—Foremost Dairies, Inc., San Francisco. No. 2,845,350.

Aromatized Coffee Made by Electrically Attracting Oppositely Charged Aroma-Bearing Particles and Powdered Coffee —S. N. Baruch, N.Y.C. No. 2,845,351.

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Processing Marshmallows From Aqueous Mixture of Saccharides and Gelatin by Beating Under Gas Pressure, Extruding, Cutting—National Dairy Products Corp. No. 2,847,311.

EQUIPMENT

Puffing Unit for Extruded Cereal Meal—G. O. Graves, Mishawaka, Ind. No. 2,842,072.

Popcorn-Flavoring Machine Including Fenced Rotating Plate, Means for Feeding Product, Flavoring — General Foods Corp., N.Y.C. No. 2,843,080.

Shortening - Handling Unit Comprising Tank Assembly, Drum Holding, Heating, Emptying Means—Ferry Sheet Metal Works, Inc., San Francisco. No. 2,844,264.

Machine for Spreading Halved Fruit on Drying Trays—D. W. Mattos, San Jose, Calif. No. 2,844,926.

Breading Unit Employing Screw Conveyor, Chute, Vibrating Screen, Dust-Removal Means, Belt Conveyor—C. E. Ray, Kokomo, Ind. No. 2,845,040.

Shrimp Eviscerating, Shelling Unit—F. L. Deal, Brunswick, Ga. No. 2,845,654.

Sausage-Linking Machine—L. P. Cross, Valparaiso, Ind. No. 2,845,655.

Poultry-Processing Equipment —Swift & Co., Chicago. Nos. 2,846,717, 718, 720.

Continuous Fowl-Picking Machine—Honolulu Oil Corp. No. 2,846,719.

Continuous Cheddaring Unit Comprising Conveyor-Mounted Curd Receptacles, Cutting and Whey Drainage Means—Swift & Co., Chicago. No. 2,846,767.

PACKAGING

Milk-Can Filler Including Reciprocating Platform, Fill Tube, Controls—Ft. Wayne Dairy Equipment Co., Ft. Wayne, Ind. No. 2,849,034.

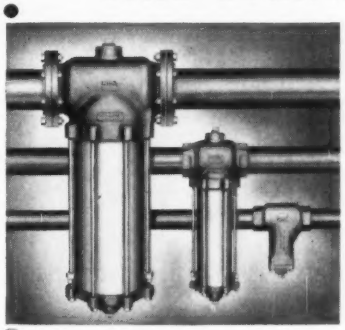
Packaging Foods by Coating With Aqueous Emulsion of Plasticized Solid Vinylidene Resin, Drying, Heating to Render Coating Continuous—R. C. Weinmann, Chestnut Hill, Mass., and R. A. Cotton, Nashua, N. H. Nos. 2,849,319, 320.

Multi-Ply Wrapper for Brine-Cured Ham—F. X. Brucker, Mt. Prospect, Ill. No. 2,849,322.

Packaged Frozen Food Comprising Two Nesting Metal-Foil Box-Like Members, Inner With Perforated Bottom Wall Containing Ready-to-Cook Product, Outer Having Ice in Bottom—G. G. Gunsberg, Huntington Woods, Mich. No. 2,850,391.

Want more information on any of these recent patents—if so, you may obtain detailed printed copies by writing direct to the U. S. Patent Office, Washington, D. C., giving serial numbers of those you want and enclosing 25¢ for each copy.

LINE STRAINERS



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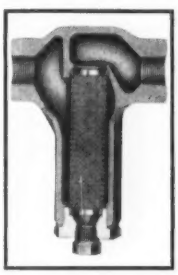

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B.F.Goodrich

Photo courtesy Brooks Foods, Inc., Collinsville, Illinois

Green belt improves inspection, reduces eye strain, cleans easily

B.F.Goodrich belt cuts maintenance costs, lasts longer too

Problem: Those women inspect some 10,000 pounds of mushrooms a day. At first, a white conveyor belt was used on this line. But it soon turned a muddy brown color. Inspectors strained their eyes looking for bad spots on the mushrooms. The belt was difficult to clean.

What was done: Then a B.F.Goodrich distributor recommended an improved conveyor belt, developed by B.F. Goodrich for handling many kinds of food. The Highseal belt is light green in color, a shade selected by color experts as being easiest on the eyes for inspection service. A special rubber compound gives this belt good resistance to moisture, food acids, most greases, fats and alkalies. It can take temperatures down to zero, up to 212 degrees.

Savings: After three years, the Highseal belt has outlasted the previous belt, and still looks good. The chief engineer of the plant reports that maintenance is no longer a problem. From the standpoint of cleanliness, the belt has exceeded expectations in every way. Employees who work over the green belt eight hours a day find their job easier, more pleasant.

Extra benefits: Since food can't grind into its smooth, polished surface, this belt can be wiped clean with a damp cloth—no scrubbing or scouring needed. Since it is odorless, tasteless, non-toxic, there's no danger of the belt contaminating food.

Where to buy: Your B.F.Goodrich distributor has full information on this belt and can tell you about its many other advantages for food-handling operations. *B.F.Goodrich Industrial Products Company, Dept. M-499, Akron 18, Ohio.*

B.F.Goodrich *conveyor belts*

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PACKAGING DESIGNER—To innovate food package and/or machine design for new product application. Degree in Engineering with minor in Commercial Design.

Positions offer excellent opportunity in expanding program. All replies will be treated confidentially. Send resume including salary requirements to:

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Wanted—Man with experience in pickle production processing and sweetening to work in modern pickle plant located in middle west. Give all pertinent information when answering. P-9327, Food Engineering.

Engineer-Designer-Wrapping and Packaging Equipment National confectionary manufacturer, metropolitan New York, offers permanent opportunity for mechanical engineer with proven ability in design and development of automatic wrapping and packaging machinery 5-figure starting salary commensurate with experience. Write fully including past earnings. Our staff knows of this ad. Box 449-B, 300 W. 43 St., N. Y. 36.

Opportunity for Control Chemist in Food Manufacturing plant. Must have background in Jams, Jellies, Kernel Paste and poppy butter. Salary open-Strictly Confidential. P-9534, Food Engineering.

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Food Technologist, with extensive experience in manufacture, development, control, of a wide line of confectionery and chocolate products, desserts, cereal products, ice cream, and other foods, as as well as laboratory direction, desires a position of responsibility. PW-9592, Food Engineering.

Management, Qualified Administrator, Seeks new opportunity. Previous background, food lines, multi-unit operation. Recent experience feed industry. Offers value to progressive organization, seeking improvements, operating costs, efficiencies. Specializes organization structure, surveys, projections, development projects, extended facilities. Record includes many savings, notably labor. PW-9578, Food Engineering.

Available—Food Scientist, PhD., January, 1959. Extensive training in chemistry and microbiology. Experience in frozen foods and flavor analysis. PW-9536, Food Engineering.

Food Technologist with comprehensive, responsible experience in many phases of food industry including R&D, production and technical service. Desires position centering on applications or sales development. Salary negotiable. PW-9620, Food Engineering.

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Werner & Pfleiderer 3000 gal. and 3500 gal. Jacketed Double Arm Mixers.
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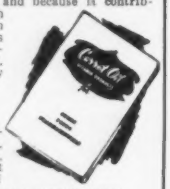

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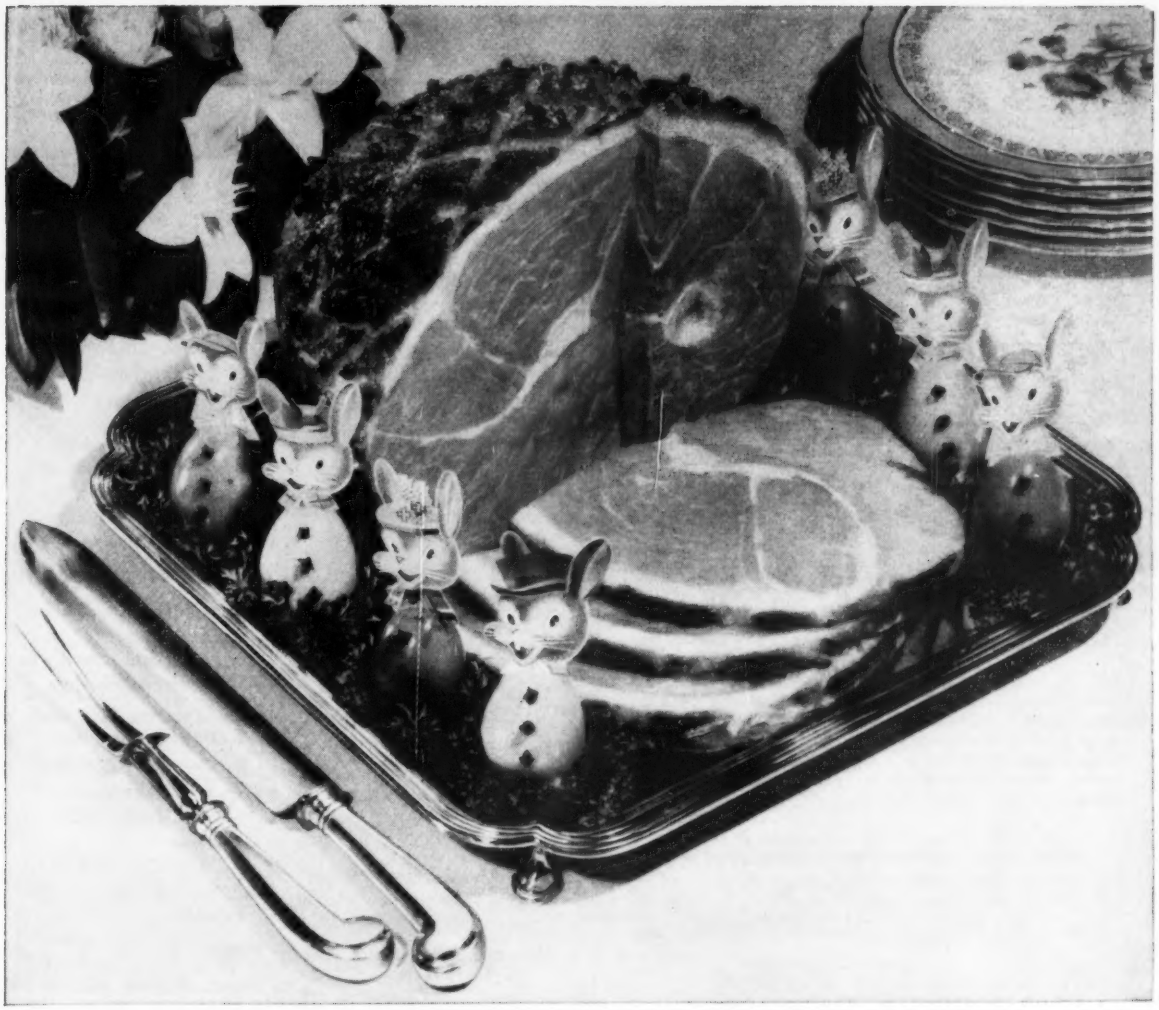

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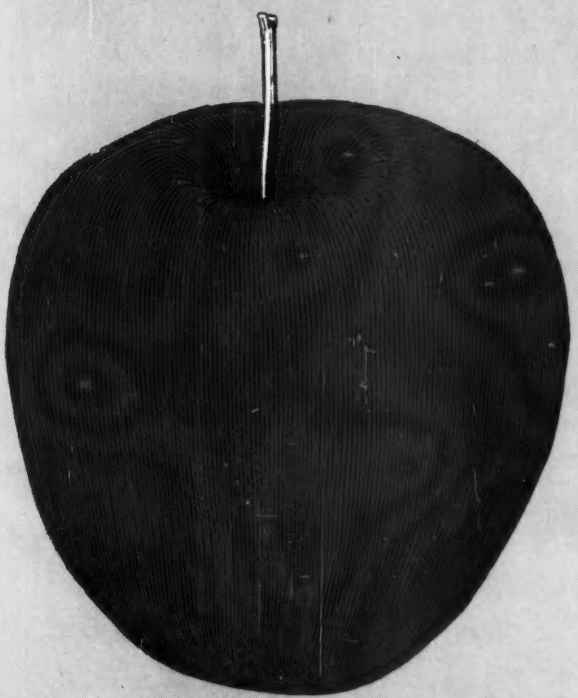

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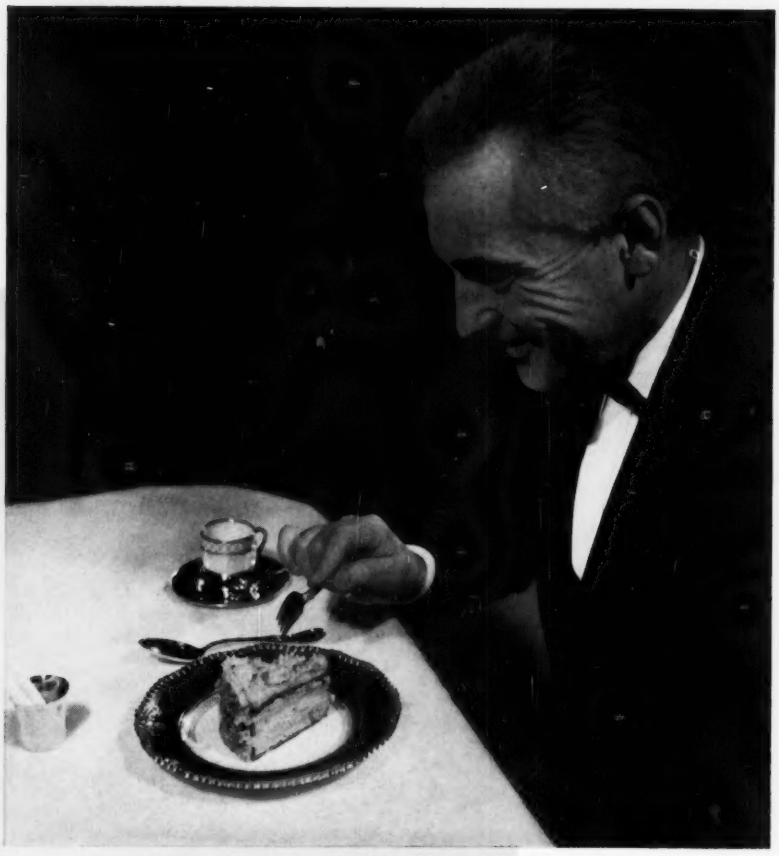

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